



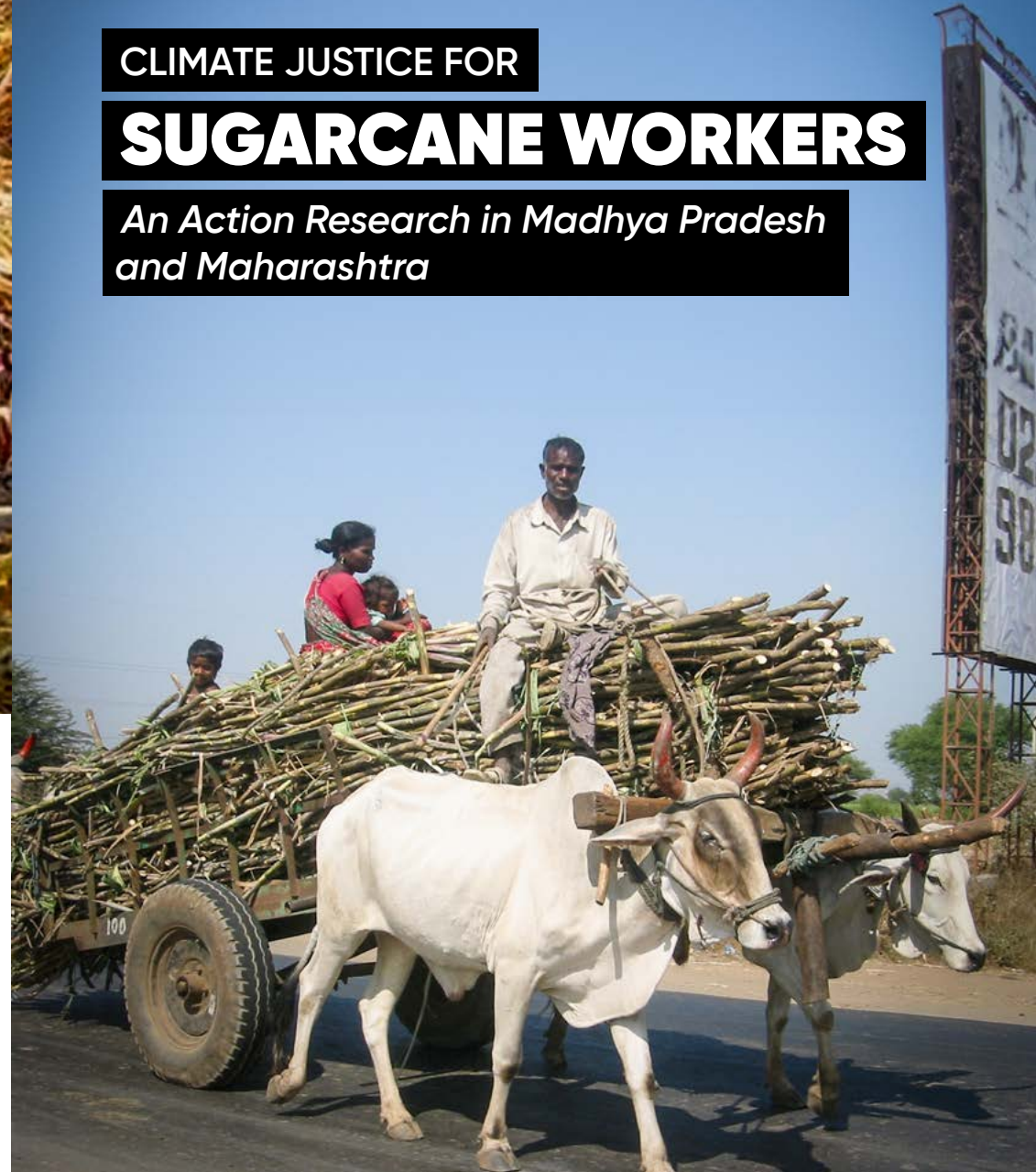
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ActionAid Association (India)

CLIMATE JUSTICE FOR

SUGARCANE WORKERS

*An Action Research in Madhya Pradesh
and Maharashtra*



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Actionaid Association, F-5 (First Floor), Kailash Colony, New Delhi -110048.

[+911-11-40640500](tel:+91111140640500)

ActionAid Association is an Indian organisation working for social and ecological justice in 24 states and two union territories. Together with supporters, allied organisations, communities, institutions and governments, we strive for equality, fraternity and liberty for all.

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May, 2024






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ActionAid Association (India)

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ActionAid Association, F-5 (First Floor), Kailash Colony, New Delhi -110048.

 +911-11-40640500

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Foreword

Climate justice is a concept that is gaining popularity worldwide. It brings questions of power and equity into the discourse on climate change, highlighting that the consequences of the current climate crisis are borne most by those who have the most negligible role in creating it. Climate justice refers to the advocacy for equitable solutions to the climate crisis we all face.

For the marginalized and vulnerable communities of India, the impact of climate change is significant and increasing. Global warming exacerbates existing precarities and vulnerabilities and sometimes creates new challenges. Slow-onset conditions and extreme weather events lead to losses of income, livelihood, health, and habitats for communities at the frontlines of nature.

For several years now, ActionAid Association has been documenting the vulnerabilities, consequences and impact of climate change on the lives of most vulnerable communities in different ecologies and states of India. We favour participatory action research led by members of communities most impacted. These action research initiatives not only document the challenges communities face but also put propositions on what we need to ensure to enable communities to adapt to and mitigate the impact of climate change.

Last year, we documented the impact of climate change on coastal communities – *Lost to the Sea – A Study on Sea Intrusion and Displacement in Coastal Odisha* and pastoralists – *Climate Justice for Pastoralists – The Gujjar Community of Himachal Pradesh Speaks Out*. The current report emerges from a study on the impact of climate change on sugarcane workers from Maharashtra and Madhya Pradesh.

The impact of climate change on the lives and livelihoods of sugarcane workers is substantial—the study documents how their precarities have multiplied and vulnerabilities enhanced. For sugarcane workers, climate change is not just about environmental sustainability but also about ensuring decent working conditions, access to social security

and public services, equitable access to resources and fair treatment in the face of climatic challenges. It is about the idea of climate justice, which recognizes that climate change is linked with issues of power and equity and it's just resolution needs combine ecological and environmental considerations with social justice and protect the rights of the most vulnerable populations by advocating for equitable access to environmental resources and a sharing of the burden of the impact of climate change as well as equal participation in planning and undertaking climate action.

In its conclusion, the report provides some recommendations for actions, ranging from measures to improve workers' immediate health and safety needs, income security and employment stability to ways in which a comprehensive support system can protect workers. The particular needs of women and children and the need to build resilience in source villages to prevent distress migration are also dealt with. This report represents how sugarcane workers see the pathway towards just futures in a world increasingly more impacted by climate change.

I would like to take this opportunity to congratulate Tanveer Kazi, Associate Director, ActionAid Association and all the colleagues working in Maharashtra and Madhya Pradesh for leading this work with sensitivity and patient listening and bringing out this essential publication. In no small measure, they have succeeded in inserting the voices of vulnerable communities into the discourse on climate change, which is too often dominated by elites. I am confident that this publication will prove a significant step towards climate justice and provide communities with an agenda for future action.

Sandeep Chachra
Executive Director
ActionAid Association

Acknowledgements

Climate justice is crucial for addressing the disproportionate impact of climate change on marginalized communities, including the sugarcane workers in Maharashtra. These workers face significant challenges from unpredictable weather patterns, such as extreme heat and irregular rainfall, which adversely affect their working conditions, health and economic stability. Achieving climate justice means ensuring equitable access to resources, fair treatment and inclusion in decision-making processes.

This study aims to analyse the adverse impacts of climate change on the livelihoods of sugarcane workers in Maharashtra. It seeks to document specific losses, assess adaptive capacities, and evaluate current mitigation strategies. By understanding how extreme weather affects productivity, income, health and socio-economic conditions, we aim to develop robust strategies that promote climate justice. Advocating for policies that address environmental sustainability and social equity will help protect their rights and improve their livelihoods. Our goal is to secure the well-being of sugarcane workers amid a changing climate by equipping them with the essential resources to adapt and prosper.

We express our deepest gratitude to all the individuals and organizations listed below, whose steadfast support, collaborative spirit, and significant contributions were instrumental in completing this study. They played an invaluable role in shaping the outcomes and expanding our understanding of the subject matter.

We are particularly indebted to the community leaders whose vital roles in organizing meetings and facilitating the study across Madhya Pradesh and Maharashtra significantly enhanced the accuracy and depth of our findings. Heartfelt thanks go to Kiranrao Thankre, Gitaram Pralhad and Arun Jadhav in Ahmednagar, Anil Bagul in Aurangabad, Kadudas Kamble, Rajabhau Kashinath Ghode and Bharat Phulmali in Beed, Rajan Wagh and Ankush Sonwane in Dhule, Bharat Balwante and Radhika Chincholikar in Hingoli, Suresh Thakar in Jalna, Machindr Kashinath Gavale in Nanded, Dnyaneshwar Thakre in Nandurbar, Rameshwar Mali in Nashik, Bajrang

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Tate in Osmanabad, Raghunath Kasbe and Papuraj Shelke in Parbhani, Somnath Gore in Pune, Dutta Gore in Sholapur, and Shivdas Gayakwad and Gayatri Sonwane in Jalgaon, all in Maharashtra. We express our gratitude to Veerendra Dubey in Damoh, Kiran Karchhale in Betul, Hari Singh Meravi in Dindori, Shinu Rathore in Mandla, Umesh Meda in Jhabua, Laxmi Solanki in Khargone, and Akhilesh Gujar in Khandwa, all districts in Madhya Pradesh.

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We extend special acknowledgement to Rakesh Thakur, Jayant Lakra and Anamika Roy of the Action Aid Association, North-Central Cluster Office. Their contribution, coordination and leadership were cornerstone elements in navigating the complexities of this study. We also sincerely thank Mashkoo Alam, North-Central Cluster Office, ActionAid Association, for his exceptional supervision and guidance throughout this research journey. His valuable insights and support significantly contributed to the success of this project.

We sincerely thank the Communication Unit of ActionAid Association, especially Joseph Mathai, for their unwavering support.



Lastly, we convey our deep admiration and eternal gratitude to Sandeep Chachra, Executive Director of the ActionAid Association. His unyielding mentorship, support, and words of wisdom were unshakeable pillars throughout this study, inspiring confidence and shaping its trajectory.

Tanveer Kazi

Principal Researcher of the Study and
Associate Director
ActionAid Association

Chapter 1

Introduction

What is Climate Justice, and Why is it Important for Sugarcane Workers?

Climate justice refers to a framework aimed at addressing the disproportionate burden placed by climate change, especially on marginalized and vulnerable communities. For people such as sugarcane workers, environmental sustainability along with equitable access to resources and fair treatment in the face of environmental challenges becomes important.

Climate justice seeks to rectify the imbalance which leads to the least responsible for climate change suffering its gravest consequences. It advocates for equitable distribution of environmental benefits and burdens. For sugarcane workers, this means recognizing their limited role in global emissions but still facing disproportionate fallout from climate disruptions. The principles of climate justice insist on transparency, participatory decision-making, and remedial measures that cater specifically to the needs of such affected groups.

Climate justice movements have gained momentum around the world, advocating for transformative policies that integrate social equity with climate action. International agreements like the Paris Agreement highlight the need for global cooperation to mitigate climate change impacts, with a focus on supporting those most at risk. For sugarcane workers, these movements and policies are crucial as they pave the way for initiatives such as fair-trade practices, improved labour rights, and access to climate adaptation resources. These directly benefit their communities as they provide more stable economic opportunities and enhanced workplace safety.

Importance of Climate Justice for Marginalized and Vulnerable Groups

Climate justice is particularly important for marginalized and vulnerable groups like sugarcane workers, who often lack the resources to cope with environmental changes. By focusing on these groups, climate justice ensures that adaptation and mitigation efforts improve their living and working conditions, and not worsen existing inequalities. For instance, implementing climate-resilient agricultural practices can secure a more stable income for sugarcane workers, and community-based disaster management programs can provide them with the tools and knowledge needed to protect their families and homes from extreme weather events.

Sugarcane cultivation is heavily reliant on specific climatic conditions so it is vulnerable to threats like variations in rainfall patterns and extreme temperature fluctuations. For the workers in the fields, this means increased labour under more challenging conditions and subsequently, heightened exposure to health risks like heat exhaustion.

The repercussions of climate change extend beyond physical health. Economic stability is a major concern for sugarcane workers as the unpredictability of crop yields can lead to job insecurity and fluctuating incomes. Effective climate justice measures would advocate for policies that ensure stable employment and fair wages for these workers. They would also vouch for support mechanisms during crop failures or transitions which are caused by changing environmental landscapes.

Additionally, ensuring that sugarcane workers have access to fundamental services like clean water, robust healthcare, and educational opportunities is essential. These services are critical in making communities better equipped to learn and adapt to the adverse effects of climate change. Empowering sugarcane workers and securing their participation in decision-making processes is another critical aspect of climate justice. This can be achieved in part by greater representation of these workers in environmental policy formulation to ensure that their specific needs and challenges are discussed and addressed.

Climate justice for sugarcane workers encompasses much more than mitigating environmental impacts. It has to also ensure that the rights and well-being of sugarcane workers are protected in a changing world. This involves a comprehensive approach that includes health, economic stability, access to services, and participatory governance. By focusing on these areas, climate justice addresses the immediate impacts of climate change on these workers and contributes to the long-term sustainability of the agricultural sector.

An Overview of Climate Change Impacts in Maharashtra

Maharashtra has grappled with significant climatic fluctuations in recent decades. Data from various studies, including the Maharashtra State Adaptation Action Plan on Climate Change (MSAAPCC), indicate a marked increase in temperature and altered precipitation patterns which contribute to more frequent and severe droughts and floods. Unseasonal rainfall leading to floods and waterlogging disrupts normal life and agriculture too. For example, in the Vidarbha region, there have been instances of droughts affecting the water supply for agriculture and unseasonal heavy rainfall causing crop damage. The coastal districts such as Ratnagiri have experienced increased cyclonic activities and higher than average rainfall, leading to severe flooding and damage to infrastructure. In the Marathwada region, severe droughts have been a recurrent issue which have impacted agricultural productivity and water availability. The region experienced one of its worst droughts in recent years causing delayed and deficient monsoon rains. This prolonged dry spell has led to acute water scarcity, forcing many farmers to abandon farming and migrate to urban areas in search of alternative livelihoods. These shifts threaten not only the ecological balance but also the socio-economic fabric of the region¹.

Agriculture in Maharashtra has been hit hard by climate change. Growing conditions for key crops such as soybean, cotton, wheat, and gram have been severely impacted due to changes in rainfall and temperature patterns. For example, delayed onset of monsoon and irregular dry and

1. <https://www.isas.nus.edu.sg/papers/the-climate-emergency-situation-in-maharashtra-a-big-challenge-for-uddhav-thackeray/>

wet spells adversely affect soybean and cotton germination and growth. Increased humidity and prolonged waterlogged conditions foster fungal diseases and pests, adversely affecting the health and productivity of crops. Adaptive measures with a focus on integrating climate-smart agricultural practices and technology to enhance resilience are urgently needed².

Water scarcity in Maharashtra is reaching critical levels due to a combination of decreased rainfall and increased evaporation from rising temperatures. As a result, pressure on groundwater resources has intensified and they have dropped alarmingly. It has led to overexploitation of aquifers in key agricultural regions like Marathwada and Vidarbha, resulting in adverse effects on agricultural productivity and the availability of drinking water. For instance, studies indicate that some parts of Marathwada have experienced groundwater level declines of more than a meter annually, which severely impacts the ability to sustain agriculture and meet local water needs. This overreliance on groundwater highlights the need for a strategic approach to water management that includes not just conservation and efficient usage but also equitable distribution to prevent conflicts over dwindling resources³.

The health sector in Maharashtra has also been increasingly impacted by climate change, with rising temperatures leading to more frequent and severe heatwaves. These conditions pose significant risks to outdoor workers and other vulnerable population groups such as the elderly and children. The heat causes health issues like heatstroke and dehydration and worsens chronic conditions such as cardiovascular and respiratory diseases⁴. Additionally, the increased humidity that accompanies higher temperatures facilitates the breeding and spread of vector-borne diseases such as malaria and dengue fever. The widespread standing water coupled with the humid climatic conditions in Maharashtra contribute to creating ideal breeding conditions for mosquitos, who are primary carriers of the aforementioned diseases.

2. <https://sustain.org/report-climate-change-impacts-on-maharashtra-agriculture/>

3. <https://www.downtoearth.org.in/news/agriculture/maharashtra-s-project-funds-for-climate-resilient-agriculture-has-gone-to-just-a-few-districts-and-types-of-interventions-92766>

4. <https://www.downtoearth.org.in/news/agriculture/maharashtra-s-project-funds-for-climate-resilient-agriculture-has-gone-to-just-a-few-districts-and-types-of-interventions-92766>

Studies suggest an increase in reports of the diseases and emphasize the possibility of a seasonal health crisis that can overwhelm local health infrastructures⁵. It is important to acknowledge the increasing pressure on the public health sector due to changing climatic conditions. The challenges in addressing these issues are compounded by the need to reach geographically and economically marginalized populations, who are the most at risk and have limited access to healthcare. Thus, the health impacts of climate change are not only a matter of treating illnesses but also of addressing the broader socio-economic determinants of health in the face of environmental changes.

Impact on Vulnerable Groups

The impacts of climate change are felt most acutely by vulnerable populations in Maharashtra, such as migrant workers from Madhya Pradesh working in the state, smallholder farmers, the rural poor, and women. These groups often lack the resources and resilience to adapt quickly to rapid climate changes and face risks to their livelihoods, health, and safety. For example, smallholder farmers and agriculture workers experience challenges like crop failures due to erratic weather patterns, such as unseasonal rains and extended dry spells. The climate instability makes farmers take loans to cover these losses or invest in crop inputs without guarantee of return and it directly leads to financial instability. Women, who are frequently responsible for water collection and food security within domestic setups, endure increased hardships during droughts or extreme weather events. The burden of traveling longer distances for water, coupled with the challenge of managing scarce food resources, places additional stress on them. It impacts their well-being and the health of their families. This highlights a broader issue of gender disparity due to which women's roles make them particularly vulnerable to environmental changes. These challenges underline how climate change disproportionately affects those who are least equipped to manage its impacts. The situation in Maharashtra reflects a microcosm of global issues where the intersection of climate change and social inequality presents significant obstacles to sustainable development and equity.

5. <https://www.isas.nus.edu.sg/papers/the-climate-emergency-situation-in-maharashtra-a-big-challenge-for-uddhav-thackeray/>

Sugarcane Workers in Maharashtra: A Contextual Understanding

Maharashtra is a leading sugar-producing state in India and it plays a role in the country's sugar industry. During the 2022-23 season, the state produced an impressive 124 million tons of sugar from its vast sugarcane plantations, covering approximately 13.6 lakh hectares. Millions of farmers and approximately 1.5 million seasonal workers, many of whom migrate from states like Madhya Pradesh, contributed in the harvesting and transportation of the crop⁶.

The predicament of the workers is particularly severe in regions like North Maharashtra, Marathwada, and the tribal districts in adjoining Madhya Pradesh. Factors like drought, inefficient irrigation, limited job opportunities, land and water disputes, and deep-seated social inequalities drive many inhabitants from these regions into cycles of poverty and debt. Many of them are forced to migrate and some fall prey to local moneylenders and their exorbitant interest rates.

A particular labour recruitment practice in this region is the hiring of workers in pairs, usually married couples, through intermediaries known as 'mukkadams'. These intermediaries act on behalf of the main contractors and sugar mills and organize workers into groups comprising couples. They are locally referred to as 'koytas', a term also used for the tool used in sugarcane harvesting. This method streamlines the recruitment process but it also strategically diminishes the workers' ability to negotiate better terms collectively.

Despite the critical role they play, sugarcane workers often face significant discrimination in terms of remuneration and working conditions. To begin with, the pay structure disproportionately favours men. Secondly, in spite of the nominal wage rate for farm labour being about Rs. 350 per day, workers record 12 to 15-hour shifts on average to earn this amount. Still, workers do not enjoy benefits such as retirement funds, health insurance and risk mitigation. Furthermore, their daily wages are contingent on the high quotas of work they are expected to meet.

5. <https://www.vsisugar.com/>.

The workforce in sugarcane harvesting comprises three main categories: bullock cart owners and their helpers, manual harvesters who also transport the sugarcane and cart center workers who perform both harvesting and first-mile transportation tasks. A large portion of the workforce are migrant workers who reside in temporary, tarpaulin-covered tents that lack basic amenities like water, electricity, and sanitation. Such living and working conditions not only affect their quality of life but also makes their health and safety vulnerable.

The female workers suffer from severe reproductive health issues exacerbated by the lack of medical facilities near the localities they reside in. The quality of medical care that they are able to access is also dismal. This is evidenced by reports of a significant number of women who have undergone hysterectomies as a result of misdiagnoses and a misguided solution to their unrelated health problems. Such trends highlight the dire need for better healthcare access and awareness.

Unpredictable weather patterns and rising incidences of drought, which are a direct result of climate change, threatens their livelihoods and also weighs on their quality of life. All these factors cumulatively demand policies that ensure fair wages, safer working conditions, and access to basic amenities and healthcare.

This research is aimed to provide an improved understanding of the various channels through which adverse shifts in weather patterns, driven by climate change, impact the agricultural sector. In particular, we focus on the impact of climate change induced weather disruptions on the sugarcane sector and those whose livelihoods depend on it, such as farmers, workers and transporters. In Chapter 2, we outline the primary objectives and scope of our research along with a detailed methodology of the tools employed to analyse the aforementioned impacts. In Chapter 3, we analyse various aspects of climate change impacts on workers and delve deeper into the major findings of our survey. In Chapter 4, we present the principal conclusions developed on the basis of research results and provide various policy initiatives that have the potential to address the concerning effects of worsening environmental conditions on those at the frontlines of climate change.

Chapter 2

Purpose, Scope and Methodology

Purpose and Scope of Research Action

The primary objective of this study, titled “Climate Justice for Sugarcane Workers”, is to meticulously dissect the adverse impacts of extreme weather phenomena on the livelihoods of sugarcane workers situated in Maharashtra. Our intent is to methodically register specific losses and damage that this community, inextricably linked to the land and its produce, incurs as a result of climate change and their capacity for adaptation. Simultaneously, an exhaustive analysis will be conducted of the strategies they’ve formulated and implemented to circumvent these changes.

This action research is dedicated to achieving a comprehensive understanding of the far-reaching implications of climate change and understanding the direct influence it exerts on the work processes of sugarcane workers. Broader ramifications on the health, livelihood, and overall socio-economic conditions of the workers have also been explored. A critical analysis will be performed to understand how prominent shifts in climatic patterns, specifically the advent of excessive rainfall and extreme summer temperatures, have affected productivity, income, safety, transportation, and health within this community.

We aim to gain insight into the adaptive strategies employed by the workers, their training gaps and their access to essential resources. We further aspire to probe the workers’ perspective on the sufficiency and effectiveness of measures taken by employers and the government to cushion them against the onslaught of climate change impacts. The workers’ expectations for further support and their propositions for policy changes will also be evaluated. The overriding aim is to spotlight the trials and tribulations faced by sugarcane workers as a consequence of climate change and contribute towards the formulation of effective strategies to address these issues.

Our action research critically assesses the community's perception of climate change and their experiences with the phenomenon. It attempts to gain a holistic understanding of their vulnerability to the effects of climate change and their capacity for adaptation. This endeavour is lined with a sense of urgency, born from the need to ameliorate the socio-economic backwardness of the focus communities.

The ultimate intention is for our findings to function as a roadmap for policymakers and practitioners. It can guide them towards appropriate interventions to progress climate justice and protect the rights of sugarcane workers. By addressing the issues identified through this research, we aspire to equip sugarcane workers with the tools necessary to adeptly adapt to climate change and foster resilience, thereby safeguarding their livelihood, ensuring their health and conserving their way of life.

Enquiry Questions:

The following major enquiry questions were used in this research:

1. How has climate change impacted the livelihoods of the sugarcane workers in terms of income and economic stability?
2. What specific losses and damages have the sugarcane workers experienced due to climate change and how have these affected your family's income and well-being?
3. How has climate change affected the health of sugarcane workers?
4. What are the main risks that sugarcane workers face due to climate change and how are they adapting to these risks to protect their livelihoods?
5. How effective do you think current government policies and programs have been in addressing the losses and damage caused by climate change for sugarcane workers?

Research Methodology

This section describes the methodology used in conducting the research on “Climate impact on Sugarcane Workers in Maharashtra.” The research design, sample selection, data collection methods, data analysis, and ethical considerations are discussed in this section.

Research Design

This study employed a mixed-methods approach, integrating both quantitative and qualitative data collection techniques. A survey was administered to 954 sugarcane workers, yielding numerical data through a questionnaire. Additionally, rich qualitative data were obtained from group discussions involving 42 groups of sugarcane workers, utilizing open-ended questions to capture detailed insights. The study documented environmental changes and the community’s responses to climate change. Furthermore, case studies were conducted to examine specific instances of climate change impacts on the community’s livelihoods. This mixed-methods approach enabled the collection of complementary and corroborative data, providing a comprehensive understanding of the phenomena under investigation.

Sample Selection

The sample was selected from migrant sugarcane workers from Maharashtra and Madhya Pradesh who had faced the effects of climate change while working in Maharashtra. The selection process involved a random sample of 954 respondents who were given a detailed and structured questionnaire. The research team conducted 42 group discussions and selected participants based on their experiences with the impact of climate change to ensure diversity in the sample. The sample was drawn from 150 villages from 14 districts in Maharashtra and 150 villages in 7 districts in Madhya Pradesh.

The Maharashtra districts are: Ahmednagar, Aurangabad, Beed, Dhule, Hingoli, Jalgaon, Jalna, Nanded, Nandurbar, Nashik, Osmanabad, Parbhani, Pune and Solapur.

The Madhya Pradesh districts are: Khandwa, Khargone, Jhabua, Dindori, Damoh, Baitul and Mandla

The sample selection aimed to effectively ensure the representation of a diverse group of sugarcane workers, including migrant workers from tribal areas of Madhya Pradesh. This made the research findings generalizable to the involved communities. By doing this, the research could generate findings that were relevant and applicable to the wider community of migrant sugarcane workers and could help in informing and influencing policy and decision-making processes.

Data Collection Methods

1) Survey Method

A survey method was used to collect the quantitative data from sugarcane workers using a structured questionnaire that was administered to a sample of 954 respondents across 21 key districts. It was designed to cover a range of topics, including the impact of climate change on the sugarcane workers, the losses and damages incurred by these workers and their community members and suggestions for climate justice policies. To ensure accuracy and quality of data, the survey was conducted in person through face-to-face interviews. This approach allowed for the collection of detailed and comprehensive data directly from sugarcane workers with the opportunity for clarification and/or expansion on responses if required. The use of a structured questionnaire also ensured consistency and reliability of data across the samples.

2) Focus group discussions

The focus group discussions with sugarcane workers, across various localities, were a crucial component of the research conducted. They were led by trained facilitators who ensured that the discussions were productive and meaningful. The purpose of these discussions was to gather insights into the sugarcane workers and their community's experiences with climate change and to identify the challenges they faced. The discussions were recorded and transcribed for further analysis with an aim to identify common themes and patterns about the community's perceptions of climate change. Recommendations made in the research report were based on the key takeaways from these discussions.

3) Observation Method

Observations conducted to document the impact of climate change on the sugarcane workers during harvesting season in Maharashtra was also used as a research approach. It supplemented the survey and group discussions. The research team conducted direct observations of the sugarcane workers, their families and the community, to assess the changes in the environment and their response to the impact of climate change. The observations added to the research team's understanding of the impact of climate change which they had derived from the survey and group discussions. The observations provided rich data that supported the survey and group discussions' findings, leading to a more comprehensive understanding of the issue.

4) Documentation of Case Studies

Documentation of important case studies was a research approach used to explore the impact of climate change on the sugarcane workers in Maharashtra. It aimed to gain a comprehensive understanding of the experiences, perspectives, and challenges faced by the sugarcane workers. The case studies involved in-depth interviews, observation, and document analysis of a few sugarcane workers' experiences with climate change. This approach allowed for a comprehensive analysis of the various factors that contribute to the problem.

Data Analysis

We used a rigorous data analysis process to ensure the accurate identification of significant findings which were subsequently used to address the research questions. The data collected through the survey were subjected to quantitative analysis using descriptive statistics such as means and frequencies. On the other hand, the qualitative data obtained through group discussions and observation were analysed through content analysis, which helps in the identification of common themes and patterns.

The quantitative data analysis provided a succinct understanding of the frequency of responses across different variables which helped in identifying trends and patterns. The content analysis of qualitative data allowed for a more in-depth exploration of the themes and patterns

that emerged from the former data. Together, both the processes enabled the identification of significant findings which were then presented through charts and other visual aids to facilitate effective communication and a clear and concise understanding,

Ethical Considerations

All participants were informed about the nature of the study, their rights to confidentiality and privacy, and their right to withdraw from the study at any time. The research team ensured that the data was kept secure and that the participants were not put at any risk. The research team also obtained the necessary ethical clearance before conducting the study in tandem with the ethical guidelines of ActionAid Association.

Chapter 3

Key Findings

As mentioned in the previous chapter, the objective of this action research is to critically assess the impacted community's perception of climate change, accounts of their experiences with the phenomenon and the pathways they see towards a just and ecological sound future. The questions and the conversations with the research participants attempt to gain a holistic understanding of their vulnerability to the effects of climate change and their capacity for adaptation. What follows are the key findings of the research.

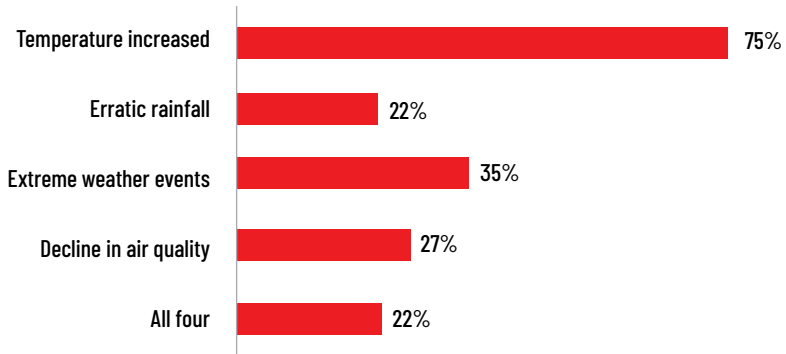
Observed Climatic Changes in the Recent Years

First-hand account and survey data from sugarcane workers present a complex picture of climate change in the last few years. An overwhelming 75% of survey respondents noted an increase in temperature. Rajan, a 45-year-old farm worker, and Lata Patil, a 38-year-old sugarcane harvester, described the rising heat as “unbearable” and emphasized its impact on their daily routines and health. Rising temperatures affect the workers' well-being and directly impact their livelihoods as it weighs on sugarcane yields.

Another significant change in weather patterns due to climate change is the higher incidence of erratic rainfall during the monsoon season. Sugarcane crops in the region are highly dependent on monsoon rainfall during June-September. Meena Pawar, a 35-year-old agriculture worker, highlighted that the increased unpredictability of crucial monsoon rains detracts the harvest, which begins in October. This is evidenced by 22% of survey respondents reporting similar challenges, reaffirming the high degree of threat to the crop's life cycle and the workers' income.

Suresh Gavde, a 48-year-old community leader, and Geeta Bhosale, a 40-year-old sugarcane worker and mother of three, are among the 35% of survey respondents who believe that the community's vulnerability

Figure 3.1: Impact of Climate Change as Observed in the Last Few Years



to extreme weather events has increased. There has also been an observed decline in air quality, with 27% of survey respondents noting that inferior air quality has had repercussions on workers' health. Ramesh Chavan, a 53-year-old veteran in the field, and Usha Joshi, a 32-year-old health volunteer, highlighted that poorer air quality has resulted in various health issues within the community.

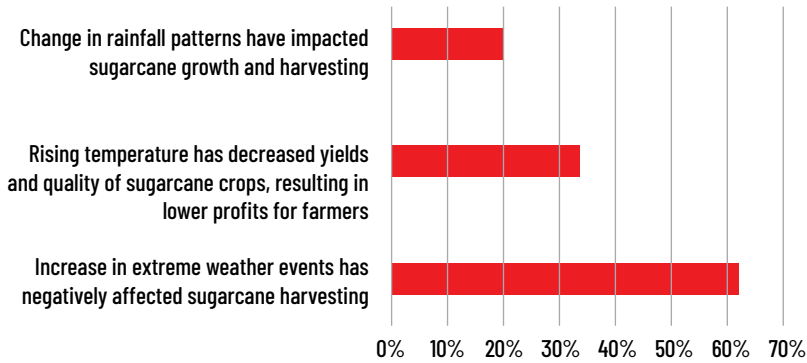
More than a fifth of survey participants believe that environmental challenges have compounded as these climatic changes have materialized simultaneously. These survey findings underscore an urgent need for comprehensive strategies to address climate change-related challenges.

Impacts of Climate Change on Sugarcane Harvesting

This action research analyses responses from sugarcane workers to better understand the impact of climate change on agricultural practices, particularly sugarcane harvesting in Maharashtra and Madhya Pradesh. The respondents detailed how climate change has affected their work, revealing significant and multifaceted impacts.

The rising incidence of extreme weather events was the primary climate change-related factor adversely affecting sugarcane harvesting, as identified by many survey respondents (63%). Extreme weather events spurred on by climate change include severe storms, floods, droughts,

Figure 3.2: Impact of Climate Change on Sugarcane Harvesting



and heatwaves. Such events have led to extensive crop damage, disruption in harvesting operations, and increased risk to workers' income, which are heavily tied to a successful harvest. The highly labour-intensive process of sugarcane harvesting implies that such disruptions significantly impact a large proportion of the population.

An increase in temperatures, another impact of changing climatic conditions, was noted as the second most significant factor weighing on sugarcane harvesting, as reported by 33% of respondents. Ideal temperatures play a pivotal role in the life cycle of the sugarcane crop, as this influences its growth, sucrose accumulation, and overall yield. An increase in temperature beyond the crop's optimal threshold results in decreased yields and quality, in turn resulting in reduced profits for the farmers. Socio-economic challenges faced by the workers in the sector are compounded by the risk of lower wages earned due to these diminished returns. Warmer temperatures also weigh on worker productivity, as highlighted by Kavita, a 29-year-old sugarcane cutter and mother of two. She noted that working conditions remain harsh despite the workers commencing their work early in the morning to evade the severe midday sun.

Adverse changes in rainfall patterns were another factor dragging down sugarcane harvests, as identified by 20% of respondents. The sugarcane cultivation process relies heavily on the timely arrival of

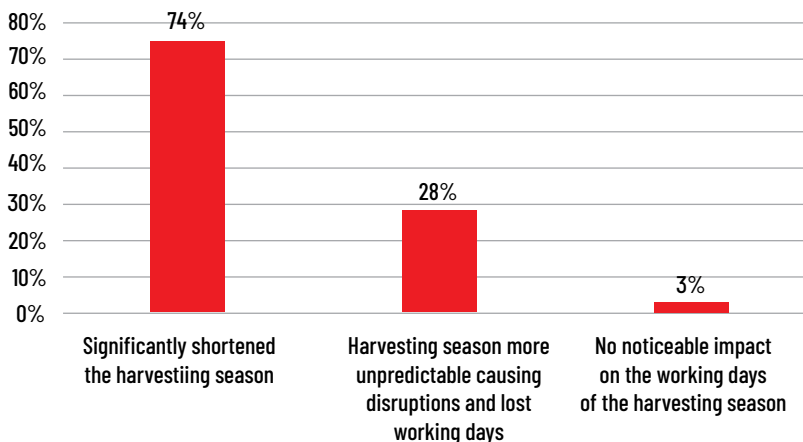
monsoons and the appropriate distribution of rainfall. Alterations in rainfall patterns can cause water stress, impacting the germination, growth, and, ultimately, the yield of the crop. Chotu Bhill, a 44-year-old sugarcane worker, noted that the sugarcane growth cycle has changed substantially in recent years, making it harder for farmers to predict the harvest period accurately.

The survey reveals that although workers and farmers engaged in sugarcane harvesting face multiple challenges due to the impacts of climate change, the rising incidence of extreme weather events is the most pressing concern. This, coupled with the rise in temperatures and shifting rainfall patterns, cumulatively impacts sugarcane cultivation and harvesting. The sector's resilience against these climate change-related factors is likely to decline further, posing a greater socio-economic threat to sugarcane workers in years ahead.

Sugarcane Harvest Days in a Changing Climate

The effects of climate change on agricultural labour, particularly during harvesting season in the sugarcane sector in Maharashtra, pose intricate challenges. Results from our survey, which centered on examining

Figure 3.3 Impact of Climate Change on Sugarcane Harvest Days



the impact of climate change on the duration of working days during the sugarcane harvesting season, unveiled significant alterations in agricultural labour dynamics.

The majority of respondents (74%) reported that climate change has considerably shortened the sugarcane harvesting season. A shortened harvesting season adversely affects labour productivity and reduces the number of working lower-earning workers, whose livelihood largely depends on wages earned during the season. This underscores the extremely high risk that changing climatic conditions pose to household wealth of sugarcane workers.

Furthermore, 28% of sugarcane workers observed that climate change has made the sugarcane harvesting season more unpredictable, leading to interruptions and lost working days. Heightened uncertainty around crop cycles arises from a variety of climatic change-related factors, such as erratic rainfall, fluctuating temperature, or increased instances of extreme weather events. This unpredictability hinders operational planning and may result in some farmers harvesting crops prematurely, adding risks to a successful harvest.

The survey findings depict a troubling scenario regarding the impact of climate change on the operational period for the sugarcane harvesting season in Maharashtra. They highlight how most sugarcane workers face considerable reductions and unpredictability in their workdays due to climate changes. These results emphasize the complex manner in which climate change is worsening the socio-economic challenges confronting these already marginalized workers.

Survey efforts also included a focus group discussion on the impact of climate change on the working days during the sugarcane harvesting season where several workers shared their first-hand experiences. Dilip Wagh, a senior harvester with over 20 years of experience, highlighted the shortening of the harvesting season over the past decade, dampening his earning capacity and making it increasingly difficult to support his family. Anita Gaikwad, a 40-year-old worker and mother of two, expressed concerns about the season's growing unpredictability, highlighting the inconsistency in daily wages due to sudden weather

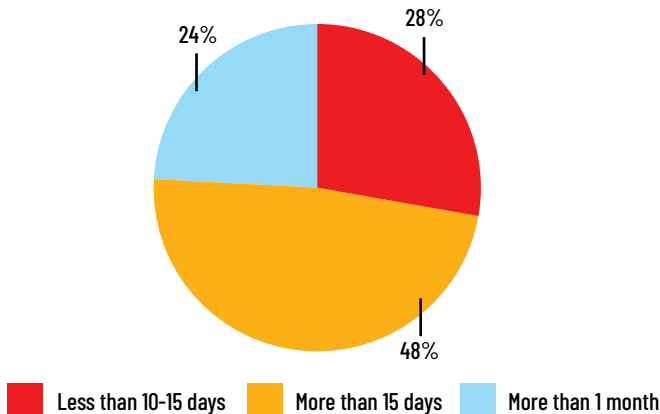
changes. Given that many households live pay check to pay check, such developments significantly impact workers' quality of life. Rahul More, a 45-year-old cutter and community leader, also pointed to frequent disruptions caused by unexpected weather events, leading to lost working days and income. Vijay Sonovane, a 50-year-old worker, stated that these disruptions have far-reaching consequences as they also have a broader impact on the overall well-being of the community and future prospects for their children.

Perceived Loss of Days in Last Sugarcane Cutting Season

As climate change scenarios continue to evolve and escalate, so do their impacts on agricultural workers, such as those involved in sugarcane harvesting. Our study firmly establishes that shifts in weather patterns, particularly excessive rainfall, have begun to reshape the timeline and productivity of the sugarcane-cutting season.

The data obtained from this survey provides a worrying portrait of the reality these workers face. Nearly half, 48% of the respondents, reported losing more than 10-15 days of work in the last sugarcane cutting season due to climate change-related factors. This considerable loss of

Figure 3.4: Lost Days in Last Sugarcane Cutting Season



productive work days has implications for the economic viability of the sugarcane industry and the livelihoods of those dependent upon it.

A significant proportion of workers (24%) have reported a loss of more than one month in the last sugarcane-cutting season. This represents a substantial disruption to the agricultural calendar and potentially severe repercussions for the socio-economic stability of these workers and the industry at large. This data indicates that the increased volatility of weather patterns is strongly linked to the predictability and productivity of agricultural practices.

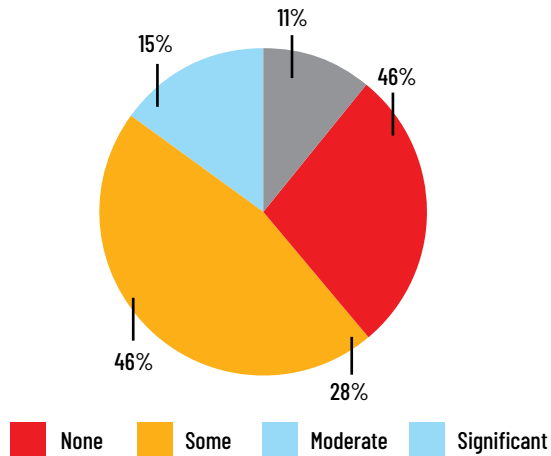
During a focus group discussion on the impact of climate change on the sugarcane cutting season, several sugarcane workers from Maharashtra and Madhya Pradesh shared their experiences. Kalu Bhalerao from Aurangabad, a 52-year-old veteran sugarcane harvester, remarked, "Last season was particularly challenging. Excessive rainfall disrupted our usual schedule. I personally lost more than two weeks of work. It's not just about the lost wages; it's about the unpredictability that's making planning difficult for us." Echoing this sentiment, Guddi Bai, a 43-year-old sugarcane cutter from Jalna, stated, "The weather patterns are nothing like what we used to see. Last cutting season, I couldn't work for almost a month. It's tough, especially when you have a family to feed. The rains came at times when we least expect them, affecting the crop and our workdays." Vijay More, a 45-year-old field supervisor and harvester, observed, "The shifts in weather patterns are reshaping our entire sugarcane cutting season. We had to halt work for several days, sometimes even weeks. It's concerning because these lost days directly impact our income and the overall output." Sunita Shinde, a 28-year-old young sugarcane worker, shared her perspective, saying, "Being relatively new to this field, I was taken aback by how much the climate affected our work. Last season, I couldn't work for several weeks. It's disheartening to see the crop ready but the weather not permitting us to harvest." Dinesh Shinde, a 50-year-old community leader and sugarcane cutter, emphasized the broader implications; "Our community has been in the sugarcane harvesting industry for several years. But the last cutting season was unlike any other. We lost a significant amount of time due to unexpected weather changes. We need to find ways to adapt and ensure the socio-economic stability of our community."

These statements and survey results provide a glimpse of the tangible impacts of climate change on the sugarcane cutting season and the challenges faced by workers in real time. The increasing unpredictability of the season, which often translates to lost workdays, demonstrates the urgency of recognizing and addressing these challenges.

Lost Income: Impact of Shortened Workday

It is important to focus on how the daily earning of sugarcane workers is impacted by socio-economic challenges induced by climate change.

Figure 3.5: Lost Income: Impact of Shortened Workday



Our analysis draws on the survey data to explore the economic ramifications of a climate-induced shorter harvesting period.

The results show that 46% of the surveyed population lost some income due to shorter workdays. Such a large proportion indicates the pervasiveness of this economic challenge. Climate change-induced shorter work days have an immediate effect on the economic stability of sugarcane workers, as they threaten their livelihoods.

Around 14% of respondents reported losing a moderate amount of income due to shorter workdays. This suggests that a notable share of

sugarcane workers are experiencing economic losses. Such losses can affect not only their daily subsistence but also their capacity to meet their long-term economic obligations, such as children's education, health care costs, and debt repayments.

Survey results show that more than 1 in every 10 workers is being critically affected by shorter work days as a result of weather-related disruptions, as they have observed a large loss of income due to shorter workdays. These workers are bearing the brunt of climate change, as their economic security and livelihoods are directly and immediately affected. Such huge income losses can push workers further into the spiral of poverty, debt, and socio-economic instability.

Sugarcane workers also shared their experiences regarding the economic impact of climate-induced shorter work days through a series of focus group discussions. Ghanshyam More, 52, a seasoned agriculture worker and sugarcane harvester, mentioned how the reduced hours have directly affected his daily earnings and made it challenging to cope up with his loan management and his family's basic needs. Anita Yelge, 38, a sugarcane harvester, expressed her concerns about not only meeting sufficient daily expenses but also being able to save for her children's education. Several other workers voiced their fears about the prospects of the broader community, as many continue to be at high risk of socio-economic instability due to the significant loss in income, potentially pushing them further into the cycle of poverty and debt.

This trend of declining income earned from the harvesting season highlights how climate change-induced reduction in workdays is closely tied to the declining financial health of sugarcane workers and their households. Such developments can have immediate and tangible effects on the socio-economic fabric of our society, particularly of the vulnerable section.

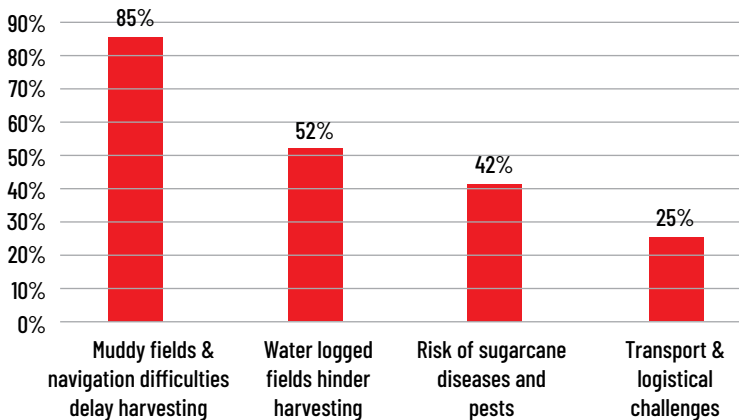
Erratic Rainfall Patterns in Harvest Season

The survey data reveals that inadequate and uneven rainfall in recent years, particularly during the critical monsoon period, has resulted in regular disruptions over the harvesting season. On the one hand, 76% of survey respondents have observed extreme rainfall patterns

occurring frequently or worse. On the other hand, only a small minority of respondents (2%) believe that erratic rainfall is a rare phenomenon.

The survey findings also elucidate the various channels through which disruptions arising from excessive and uneven rainfall affect sugarcane harvesting operations. A primary impediment to optimal harvesting conditions due to extreme rains is excessively muddy fields. As per survey responses, 85% of workers believe muddy fields lead to delays in the harvest and productivity issues and cascade

Figure 3.6: Impact of Heavy Rain on Sugarcane Harvesting



into subsequent challenges. Waterlogging in the sugarcane fields is the next major rainfall-related impact affecting harvesting, as 52% of respondents noted. The inability to access and harvest the crop due to waterlogged conditions increases the risk of crop damage and dampens workers' productivity.

Increased risk of sugarcane diseases and pest infestations due to excessive rainfall also hinder harvesting operations, as per 42% of respondents. These factors adversely affect the quality and yield of the harvested crop and weigh on the overall efficiency of the workforce. According to 25% of respondents, increased logistical challenges and transportation difficulties due to excessive rainfall have adversely impacted harvesting operations. Waterlogged roads and limited

accessibility to usual routes lead to delays in transporting the harvested sugarcane from fields to sugar factories, reducing operational efficiency in the post-harvest phase.

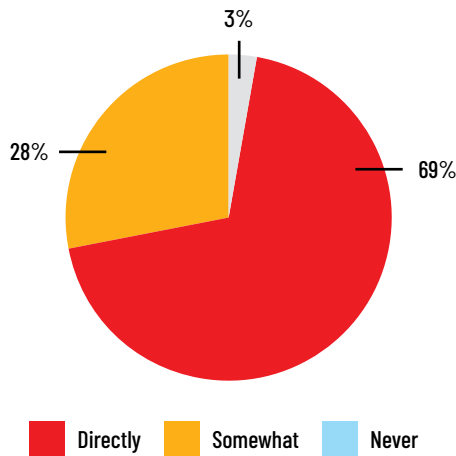
Several members from the worker community shared their experiences in focus group discussions centred on the problems arising from extreme rainfall events during the harvest season. Anil Ramdas, 47, a sugarcane worker from Jalgaon with extensive experience, has observed a marked increase in excessive rainfall-related disruption in the harvesting period. He highlighted how unexpected rains transform the fields into muddy landscapes, making it difficult to maintain the usual pace of work. Bansi Rathod, 33, a sugarcane harvester from Hingoli, added that waterlogged fields hamper immediate productivity while increasing the risk of sugarcane remaining unharvested for extended periods. She also observed increased instances of sugarcane diseases and pests following heavy rains. Sanjive Kale, 39, from Ahmednagar, pointed out that waterlogged roads and limited accessibility can be a logistical nightmare during the transportation stage of the harvesting cycle. Sunita More, 43, a sugarcane cutter and mother of two from Nashik, noted that these challenges have a ripple effect as they extend into all post-harvest processes further down the chain and impact overall efficiency. The consensus among the participants of the discussion was clear: changing rainfall patterns, as a result of climate change, hinder the harvesting process and impact the livelihoods of sugarcane workers. This provides evidence to the adverse impact that erratic rainfall patterns, a result of climate change, have on the harvesting process.

Observations on Workplace Safety in Wet and Muddy Conditions

This section aims to gauge whether excessive rainfall has resulted in increased safety hazards or a higher number of accidents due to a decline in working conditions. The survey findings shed light on a critical and often overlooked dimension of climate change-induced challenges: worker safety.

A wide majority of survey respondents (97%) stated that they have observed increased safety hazards or accidents due to wet and

Figure 3.7: Workplace Safety Observations in Wet and Muddy Condition



muddy conditions resulting from excessive rainfall. This underscores the immediate threat that climate change poses to worker safety. Moreover, the gravity of the situation becomes even more pronounced when considering the specific experiences shared by the workers. Within the 97% of respondents who noted increased safety hazards, a significant majority (69%) reported directly observing accidents and believed unsafe working conditions as a result of excessive rainfall pose a tangible threat to worker safety.

Specific experiences shared by the workers in a focus group discussion highlight the depth of safety issues faced by the workers. Sasi Ulkey, 32, a sugarcane cutter from Baitul, remarked, “Every rain session, the fields turn into sludge pits. Last year, one of my younger colleagues slipped and injured his leg severely.” Godawarii, 40, a sugarcane harvester and mother from Beed, echoed this sentiment, saying, “The muddy conditions make it difficult to see hidden ditches or holes. My sister twisted her ankle in such a situation.” Suryabhan, 35, a farm worker, highlighted another dimension, “The wet conditions not only make the ground treacherous but also make the sugarcane heavy and slippery. We’ve had instances where workers strained their backs or had sugarcane bundles fall on them.” These accounts underscore the

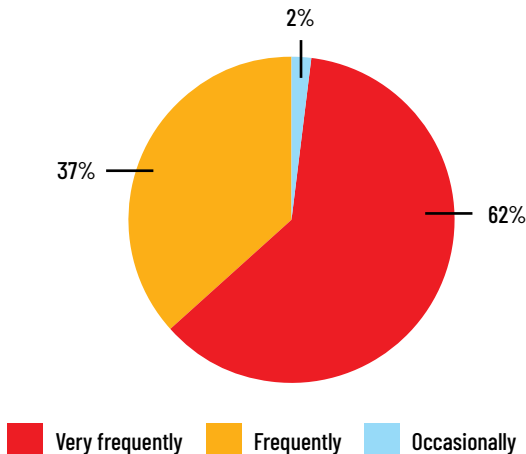
extent of danger that climate-induced excessive rainfall can have on overall output and the safety of the workers.

Excessive rainfall, driven by shifting climate patterns, not only disrupts the agricultural cycle and economy but also poses a rising threat to the well-being of sugarcane workers. These workers, primarily from marginalized and socio-economically disadvantaged areas, are effectively on the front lines of climate adversities as they now face heightened occupational hazards.

Observed Impact of Heavy Rainfall on Sugarcane Workers' Income

This section aims to analyse how excess rainfall, as a result of changing climatic conditions, has affected the income of sugarcane workers. A majority of respondents (62%) felt that excess rainfall has led to a significant reduction in their income levels. Such broad consensus on the impact of excessive rainfall clearly underlines the direct correlation between weather irregularities and income instability in this community. Therefore, changes in the climate not only lead to operational disruptions but also have the potential to worsen the economic vulnerabilities of the workers.

Figure 3.8: Impact of Heavy Rainfall on Income of Sugarcane Worker



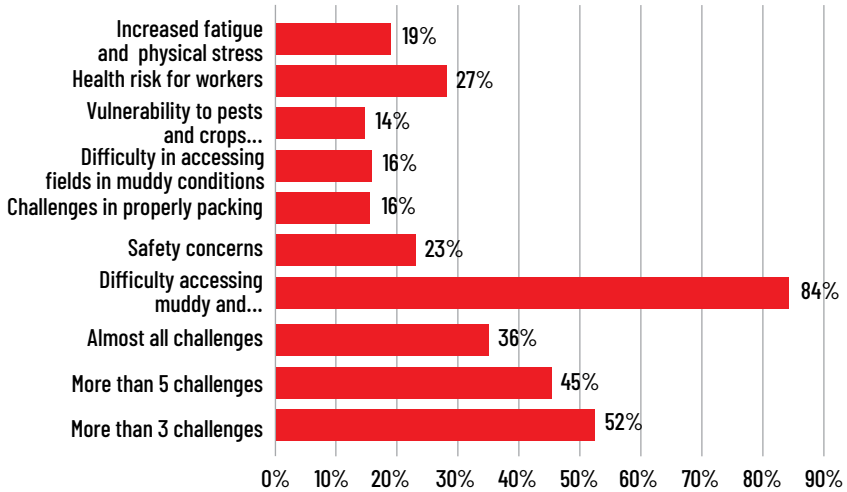
Furthermore, 37% of the respondents have experienced some decline in their income due to excess rainfall. While the income impact has not been as drastic for this group, it signals a trend of income erosion linked to the excess rainfall. The scale of impact might vary but it is a shared hardship for these workers. According to the survey results, only 2% of respondents believe their income has remained unaffected due to the rising incidence of excess rainfall. This indicates the pervasiveness of the issue and the high economic risks faced by the majority of sugarcane workers.

Several sugarcane workers from Maharashtra and Madhya Pradesh shared their experiences of the channels through which excess rainfall has affected their incomes. Mangulal Jadhav, a 47-year-old veteran harvester from Aurangabad, expressed that the frequent and unexpected bouts of heavy rainfall have delayed harvesting, directly reducing his income. Hirabai, a 40-year-old sugarcane cutter from Jhabua, stated that while there has not been a drastic reduction in her income, she has observed some erosion in the income earned during the harvesting season. Bapu Bhill, a 47-year-old worker from Ahmednagar, highlighted that greater challenges to manage the workforce and harvesting schedules, due to erratic rainfall are also a source of rising income instability in the community. Priya Gavde, a 28-year-old sugarcane worker, expressed her concern about the increased financial stress on her household as a young mother of two due to uneven or excessive rainfall. These first-hand accounts underscore the cascading effects that climate change-induced excess rains can have on workers' livelihoods.

Increased Transportation Bottlenecks Due to Heavy Rainfall

The impacts of climate change, particularly the increase in excessive rainfall events, have far-reaching implications for the agricultural sector. Sugarcane producers and workers are among those facing the brunt of climatic shifts and related challenges. Delays in the transportation of harvested sugarcane from fields to sugar factories are one such challenge arising from excessive rainfalls. According to survey responses, 84% of respondents believe that accessibility issues due to waterlogged fields are a primary factor affecting transporting operations when asked about the impact of excessive rainfall. Waterlogging issues

Figure 3.9: Challenges of Transporting Sugarcane During Heavy Rainfall



and muddy fields hinder the standard process and pace of on-field harvesting operations and dampen workers' productivity.

Another factor impeding efficient transportation is a rise in safety concerns, according to 23% of survey respondents. Slippery conditions during loading and unloading sugarcane trucks due to pouring rains are one source of increased risk to worker safety, as per the survey results. Difficulty in loading sugarcane onto trucks in wet conditions also induces operational inefficiencies during transportation, as noted by 16% of survey participants.

Excess rains can negatively impact the quality of the harvested produce, with 16% of respondents reporting challenges in properly packing the harvested sugarcane due to high moisture content and 14% reporting increased vulnerability to pests and diseases. These factors increase the risks of crop damage and lower overall yield. The survey results, therefore, illustrate the strong influence of adverse rain conditions on crop health and their impact on the operational efficiency of transporters.

From a health and well-being perspective, 14% of respondents believe that excessive rainfall leads to increased exposure to waterborne diseases or musculoskeletal injuries, adding to health risks. Such developments illustrate the high human cost attached to climate change-related weather disruption, as these disrupt workers' livelihoods and health.

Survey results also reveal the multiple channels through which excessive rainfall impacts workforce productivity. According to the responses, 19% of workers state that working during periods of heavy rains leads to greater fatigue among the labour force. Additionally, productivity is adversely affected by muddy and wet environments, leading to a more unhygienic working environment for workers. The results indicate that more than half of the respondents, around 52%, have reported facing more than three of the above challenges, while 45% believe that they face more than five of the listed challenges. Similarly, more than a third of the survey participants (36%) observed a rising incidence of all the listed challenges simultaneously, indicating that workers, who are often ill-equipped to address climate change-induced issues, are facing varied difficulties on multiple fronts at the same time.

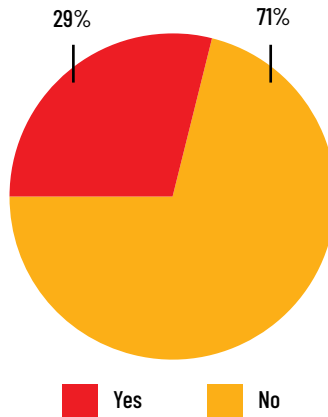
Survey efforts included a focus group discussion where workers spoke on various heavy-rainfall-induced challenges faced while transporting harvested sugarcane. Dinesh Kadam from Dhule, a 43-year-old sugarcane harvester & loader, pointed out that wet conditions make it difficult to transport harvested sugarcane to mills, increasing wastage of crops. Such delays effectively reduce the number of times they deliver the harvested crop, leading to a decline in income earned by transportation workers. Nilesh Salve, 32, a harvester from Khandwa, highlighted that muddy and waterlogged fields result in great difficulty accessing the crop, impeding productivity. Payal Pawar, 37, a sugarcane cutter and truck loader from Solapur, believes that working conditions have grown unsafe due to slippery conditions. She also mentioned that excess rain also worsens the terrain's conditions, making the loading process even more challenging. Gopal, 40, from Dindori, a field harvester, noted that challenges in packing the sugarcane due to excessive moisture and the increased vulnerability of the crop to pests and diseases have negatively impacted the quality of harvested

produce. Anita, 45, a senior sugarcane worker from Pune, stated that excess rains have increased exposure to waterborne diseases and injuries. Kishan 48, a sugarcane harvester, highlighted the decline in workforce productivity during heavy rainfall, pointing out increased fatigue, physical exertion, and the challenges of maintaining hygienic working conditions as contributing factors. Altogether, these accounts underscore sugarcane workers' multifaceted challenges due to climatic disruptions.

Perceived Health Issues Due to Wet and Damp Conditions

The critical intersection of climate change and human health is at the forefront of research on marginalized agricultural communities. Participants have been surveyed to understand changes in the incidence of health issues as a result of working in wet and damp conditions. The survey results reveal that excessive rainfall, a key result of climate change, compounds the health challenges faced by these workers, particularly fungal infections-related illnesses.

Figure 3.10: Health Issues in Wet and Damp Conditions



Analysis of the responses of sugarcane workers reveals a trend of a rising incidence of fungal infections as a direct consequence of working in wet and damp conditions, as reported by 71% of survey respondents.

This high percentage indicates how badly prevalent occupational hazards induced by climatic change are and how they amplify workers' health vulnerabilities.

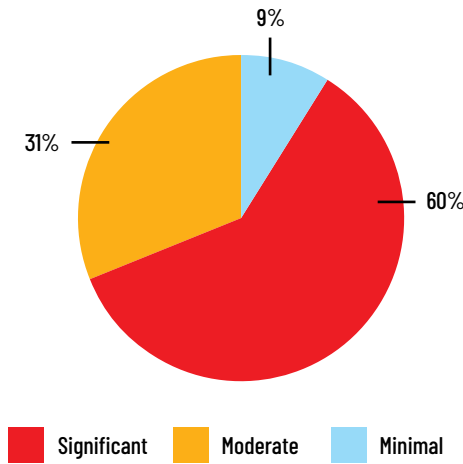
Many sugarcane workers shared their personal experiences regarding health issues in focus group discussions. Naresh Gore, 44, a seasoned sugarcane cutter from Parbhani, mentioned, "The constant wetness has caused itching and rashes on my feet. It's become a regular ordeal after heavy rains." Niki Bai, 39, a sugarcane harvester for over a decade from Mandla, expressed, "Every rainy season, I suffer from fungal infections, and it's painful to work with such discomfort." Bhaskar Gavate, 46, who has been in the fields for nearly two decades, noted, "I've seen many young workers complain about skin issues. It wasn't this bad when I started, but increasingly adverse rainfall patterns make it worse every year." Sunita More, 35, a sugarcane cutter, shared, "The dampness affects not just our health but also our morale. It's challenging to work when you're constantly battling skin infections." These first-hand accounts describe how health challenges faced by sugarcane workers are exacerbated by the changing climate. This added health burden adds to other environmental and economic difficulties induced by climate change.

Effect of Rainfall-Driven Workload Surge on Mental Health

As the psychosocial impact of climate change increasingly takes centre stage in global dialogues, it is important to assess this phenomenon within marginalized communities, such as sugarcane workers and farmers. Our study reconciles gaps in the understanding of how extreme weather events, specifically excessive rainfall, heavily affect the mental well-being and job satisfaction of individuals employed in the sugarcane sector.

Our analysis of the survey data collected from sugarcane workers indicates that the community bears a heavy psychological burden. A wide majority of respondents, 61%, indicated that the pressure to complete harvesting and increased workload as a consequence within the limited timeframe imposed by excessive rainfall has significantly impacted their mental well-being. This shows the substantial stress

Figure 3.11: Effect of Rainfall-driven Workload Surge on Mental Health



faced by workers, who are not only battling the physical challenges brought on by a changing climate but are also grappling with its mental health implications.

A focus group discussion held to shed light on the aforementioned issue revealed first-hand experiences of workers dealing with the impacts of rainfall-driven surges in workload on their mental health. Sidharth from Hingoli, a 42-year-old sugarcane harvester, expresses the challenges brought about by the unpredictability of the rains. He mentions the looming pressure to finish harvesting quickly, emphasizing the mental toll it takes, often leading to sleepless nights. Kirti Bhangare from Osmanabad, a 36-year-old sugarcane cutter and mother of three girls, speaks of the overwhelming nature of balancing family responsibilities with the increased workload at the farm during harvesting. The constant juggling, she says, has made her anxious about both her family and her work. Vikas Ram, a 48-year-old field supervisor and harvester, shares that rainfall-related disruptions make the task of managing workers and ensuring a timely harvest very difficult. The responsibility and fear of potential crop damage weigh heavily on his mental well-being. Pooja Gavde, a young 29-year-old sugarcane worker, feels the pressure acutely, being relatively new to the profession. The expectations from

senior family members who are also her co-workers and the fear of underperforming have been mentally exhausting for her.

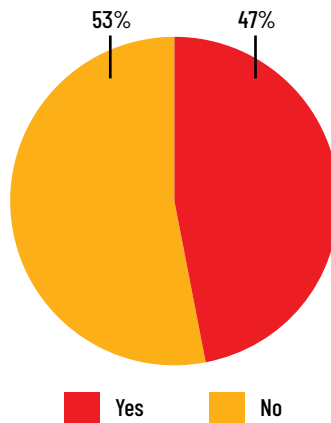
The survey results indicate that the excessive rainfall and resulting increase in workload have broader implications for their mental well-being. The physical and psychological health effects of climate change add a new dimension to the narrative around climate justice for agricultural labourers like sugarcane workers.

Workplace Injuries/Illnesses: Impact of Weather Pattern Variations

The intersection of climate change and occupational health risks is important to consider in the context of threats faced by sugarcane workers. The action research investigates the possible repercussions of climate change-induced variations in weather patterns on the incidence of injuries and illnesses among sugarcane workers. A comprehensive analysis of the survey data highlights the severe consequences of changing weather patterns on the health and safety of these workers.

According to the results, 47% of respondents affirmed that they had observed more frequent workplace injuries or illnesses that could be

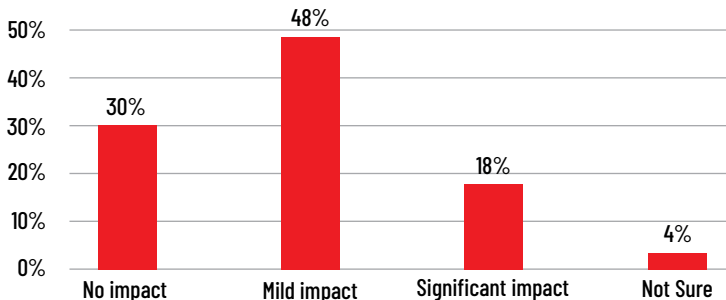
Figure 3.12: Impact of Climate Change on Workplace Injuries/Illnesses



attributed to variations in weather patterns. This suggests that nearly half of the surveyed workers have directly experienced or observed the deleterious impact of climate change on their occupational health. The testimony of these workers establishes the linkage between weather pattern variations and the exacerbated risks of injuries and illnesses at the workplace. These experiences show the urgent need to address the often-overlooked component of climate justice – health safety at work, particularly in sectors like agriculture, which are highly exposed to climate extremes.

Sugarcane workers also shared the various effects of changing weather patterns on workplace injuries and illnesses that they observed during a recent focus group discussion. Khandu Bhill, 52, a veteran sugarcane cutter, mentioned that the increasing heat often leads to dehydration and heat strokes, making it challenging to work long hours. Anila Wagh, 39, a sugarcane harvester, expressed concerns about the unpredictability of rain, noting that slippery conditions have led to more frequent falls. Bhaskar Ghogde, 44, a sugarcane worker, highlighted that the changing climate seems to have intensified the spread of certain illnesses among workers, particularly respiratory and skin conditions. Savita More, 24, a young sugarcane worker, stated that extreme weather events, like sudden storms, have not only damaged crops but also posed direct physical threats to workers in the field. Naresh Shinde, 53, a community elder and sugarcane worker, stated that the combined stress of extreme weather conditions and increased health risks

Figure 3.13: Impact of Climate Change on Health During Sugarcane Harvesting (Worksite Experience)



takes a toll on the mental well-being of many in the community. Many sugarcane workers reported that the increased frequency and intensity of injuries or illnesses pose a multifaceted challenge to the workers. Their responses reflect the vulnerabilities brought on by the impacts of climate risk increasingly compromising workers' income, physical health and mental well-being.

This section seeks to understand the health implications for sugarcane workers during the time they spend at the harvesting site and after it has concluded. The obtained results show that approximately 66% of respondents reported experiencing notable health impacts. Around 48% of the participants reported experiencing mild impacts such as dehydration, headaches, or heat exhaustion. Despite being labeled as 'mild,' these conditions should not be dismissed as trivial because they have serious effects on workers' productivity, job satisfaction, and overall quality of life.

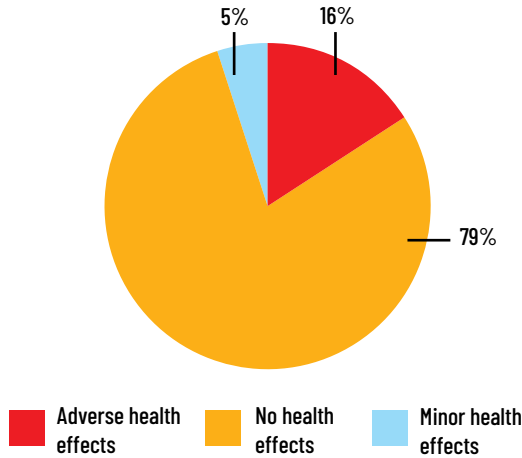
About 18% of respondents reported having experienced more serious health impacts, such as respiratory issues and heat stroke. These conditions are also indicative of more severe physiological issues and suggest an escalated degree of vulnerability amongst these workers.

These findings highlight one of the hidden dimensions of the climate crisis. It has the potential to compound workplace hazards in sectors that are heavily dependent on favorable weather conditions. The worsening of these factors bears ramifications on the socio-economic and health conditions of marginalized communities like sugarcane workers.

Health Impacts of Extreme Summer Temperatures

The detailed analysis of the survey conducted with sugarcane workers focuses on their experiences with extreme summer temperatures and the resulting health issues. 79% of respondents reported experiencing negative health effects such as dehydration, fatigue, headaches, and heat exhaustion due to the harsh conditions. Such response from the high majority report underlines the pervasive nature of these health problems, which not only hinder workers' physical well-being but may also significantly affect their productivity and income, thereby perpetuating their socio-economic marginalization. The extreme

Figure 3.14: Health Impacts of Extreme Summer Temperatures



summer temperatures, amplified by the changing climate, are also inducing a physiological stress response in these workers. It leads to dehydration and exhaustion and should not be left unchecked. Additionally, 16% of the respondents shared that they experienced minor health effects such as increased sweating, thirst, or discomfort while working in extreme summer temperatures. Though these effects may not seem as serious, the consistent presence of such discomforts could lead to cumulative health impacts over time.

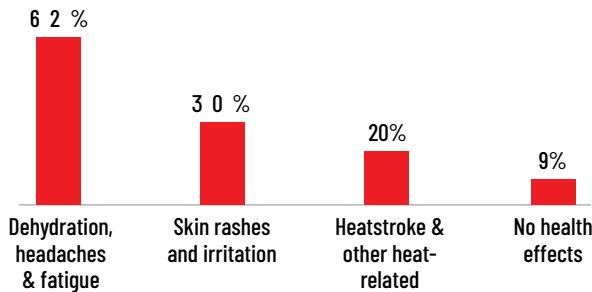
The report’s findings affirm the considerable health impacts of climate change experienced by sugarcane workers. The report further describes the multifaceted nature of these impacts, which range from severe to minor health effects. This critical analysis adds to the growing body of evidence emphasizing the importance of addressing occupational health risks among marginalized communities in the face of drastic climate change.

Heat Exposure and Health

Raised temperatures pose serious health hazards for those labouring in outdoor occupations, such as sugarcane workers, as an essential

component of the global climate crisis. This study provides critical insight into the ways in which prolonged exposure to heat during sugarcane harvesting impacts workers' health. This can be understood under the broader connection between climate change, occupational safety, and health outcomes

Figure 3.15: Heat Exposure and Health



Survey results indicate that a staggering 62% of participants reported experiencing symptoms such as dehydration, headaches, and fatigue. These symptoms indicate an increased metabolic rate, a known effect of prolonged heat exposure. This highlights the pervasive and insidious nature of heat-related health issues, which often commence subtly but may escalate to severe health problems if left unattended.

Furthermore, 30% of the respondents reported skin rashes and irritation due to heat exposure, which are manifestations of heat stress, an often-overlooked dermatological impact of climate change. 20% of workers revealed an increased risk of heatstroke, a severe heat-related disorder that can lead to complications like organ failure and is considered a medical emergency. The same 20% have also reported other heat-related illnesses like heat stroke and cramps. The high percentage is alarming and underscores the health crisis's severity.

In focus group discussions, several sugarcane workers shared their experiences with heat exposure, which has resulted in health impacts during sugarcane cutting season. Raju Jadhav, a sugarcane harvester, mentioned how prolonged exposure to the sun often leaves him feeling dehydrated. He has also experienced frequent headaches and

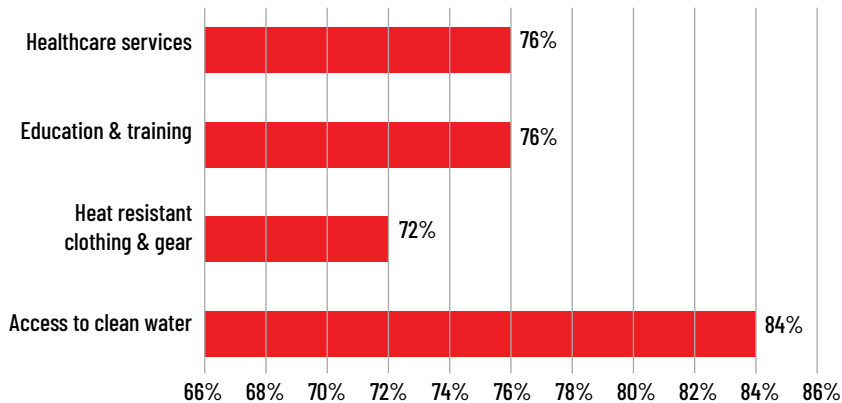
fatigue indicative of the longer health issues that manifest with subtle symptoms. Anita Kolhe, 36, a sugarcane cutter, shared her concerns about the dermatological impacts, revealing that she often suffers from skin rashes and irritation after long hours in the field. Dinesh Gore, 48, a veteran sugarcane worker, expressed his fears about the more severe health implications, recounting a close call with heatstroke. He described the condition as not only debilitating but potentially life-threatening. Kavita, 29, a young sugarcane worker, emphasized the increased metabolic rate she experienced during intense heat, which left her feeling exhausted faster than usual.

These findings paint a concerning picture of the occupational health risks these workers face under the overarching umbrella of climate change. They reinforce the urgency of the need for climate justice for the marginalized sugarcane worker community and emphasize the pressing need for protective and preventive measures to ensure their health and safety.

Healthcare and Resource Needs of Sugarcane Workers

While addressing the issue of climate change and its impact on sugarcane workers' occupational health, the workers' opinion needs to

Figure 3.16: Healthcare and Resource Needs of Sugarcane Workers



be included. An important question asked during the study was, “What healthcare and other resources do sugarcane workers think they need to cope with the effects of climate change?” The highest proportion of respondents, 84%, expressed an urgent need for access to clean water. This is a fundamental necessity as their work’s intense heat and physical demands lead to accelerated water loss and put them at risk of dehydration. Access to clean water caters to immediate hydration and is also required for sanitation purposes, making it important for the overall health and well-being of the workers.

72% of the surveyed workers needed heat-resistant clothing and gear. Their occupation exposes them to prolonged periods under the relentless sun, and heat-resistant clothing could act as a frontline defence. It mitigates the direct impact of high temperatures and potentially reduces the risk of heat-related complications. At the same time, 76% of the sugarcane workers voiced the need for education and training. This indicates a desire among workers to learn about the risks of climate change and understand the strategies they can employ to protect themselves. Effective training can equip these individuals with the knowledge to identify early signs of heat-related illnesses, understand weather pattern variations, and adapt their work practices to reduce exposure to heat.

Another 76% of the workers reported healthcare services as a requirement. This demonstrates the workers’ awareness about the critical role of healthcare in mitigating the impact of climate change. They understand that access to timely and effective healthcare, including preventive measures, routine check-ups, and treatment for climate change-related health issues, is one of the keys to their well-being.

During the focus group discussion centred on sugarcane workers’ healthcare and resource needs, several pertinent insights were shared. Dadaram Gangurde, a 42-year-old sugarcane cutter, emphasized the need for consistent access to clean water. Given the intense heat and the physically demanding nature of their work, he highlighted the direct impact of hydration and sanitation on their overall health and well-being. Anjali Pawar expressed a strong desire for heat-resistant clothing

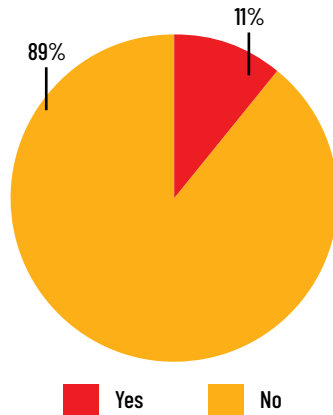
and gear which would help as a protective barrier against the scorching temperatures and alleviate the risk of heat-related illnesses. A 45-year-old harvester, Vinayak More believes education and training would help them better understand climate change nuances, recognize early symptoms of heat-related ailments, and adapt their work practices accordingly. Sunita Maravi, a 40-year-old harvester and mother of two, stressed the importance of accessible healthcare services, emphasizing timely medical interventions, routine health check-ups, and preventive measures as crucial for their welfare.

The focus group discussions and analysis of survey data provide insights into the perceived needs of sugarcane workers and contextualize them in the face of climate change. This draws attention to the importance of incorporating the perspectives and ensuring the representation of these marginalized workers in the broader conversation on climate justice.

Healthcare Training for Sugarcane Workers in a Changing Climate

This segment of our research report analyses the data obtained from a survey of sugarcane workers addressing the issue of healthcare training

Figure 3.17: Healthcare Training for Sugarcane Workers in Changing Climate



for sugarcane workers in a changing climate. It emphasizes the need for education and training in mitigating climate change related adverse health impacts. The responses provide insights into the status quo and underpin the need for immediate attention towards the socio-economic welfare of such marginalized workers.

89% of the surveyed workers reported not receiving any form of training to protect and preserve their health in the face of climate change. This alarming figure highlights a systemic inadequacy in the proactive dissemination of information and resources. The absence of training leaves the workers vulnerable to adverse health effects that are detrimental to their well-being and affect the overall productivity and sustainability of the sugarcane industry. The sheer scale of workers operating without climate-related health training is risky, highlighting the need for immediate interventions. It is necessary to implement adaptive measures, including relevant training, to equip workers at the forefront of climate change impact.

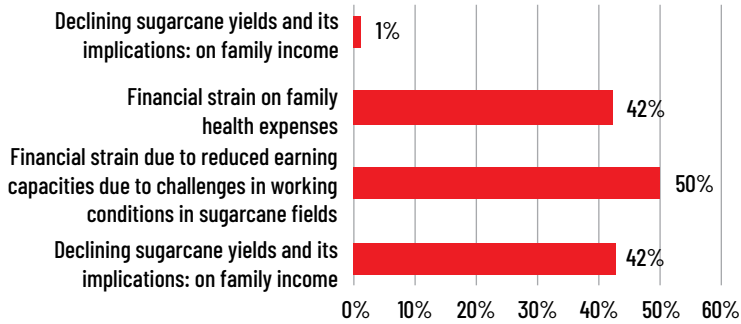
The analysis illustrates the dire state of the existing training regime and underlines a severe deficit in the preparedness of the sugarcane workers to tackle the health challenges emanating from climate change. The risks are more severe for those engaged in rigorous manual work such as sugarcane harvesting. These findings highlight the need to strengthen the resilience of this community and demand a call to action that cannot be ignored.

Financial Impact of Climate Change on Sugarcane Worker Families

In this section we examine the issue of the financial impact of climate change on sugarcane worker families', based on the responses from sugarcane workers. An analysis of the same aims to find the financial implications of climate change on these marginalized workers and their families. It has revealed a multifaceted socio-economic plight that transcends the boundaries of their immediate work environment.

From the collected data, 42% of the respondents indicated that climate change has led to a decrease in sugarcane yields, which in turn has resulted in lower income for their families. This marked decline in

Figure 3.18: Impact of Climate Change on Financial Situation of Sugarcane Worker Families



productivity not only adversely affects the agricultural sector but also hampers the economic well-being of the sugarcane workers, destabilizes their family income, and thrusts them further into economic uncertainty.

Half the workers reported that extreme weather events caused by climate change, such as floods and droughts, have made working conditions in the sugarcane fields difficult, leading to a decrease in the workers' earning capacity. With a surge in these extreme climate events, routine operations are disrupted, work security is undermined, and, by extension, financial crises increase.

A group, constituting 42% of the respondents revealed that their families' health expenses surged due to the increased exposure to heat and pesticides in the sugarcane fields. This illuminates the risk to human health and an increase in the economic burden that climate change entails and highlights the multidimensional nature of the adversities the workers face.

In a focus group discussion about the financial impact of climate change on sugarcane worker families, several distressing trends were observed. Narmada Sayam, a 29-year-old sugarcane harvester, made remarks about the unpredictable weather patterns, especially the floods and droughts, that have led to non-consistent work in the fields. These have resulted in loss of daily wages and, therefore, strain the family's finances. 47-year-old Sahadoo Thakre, a veteran sugarcane worker, added that

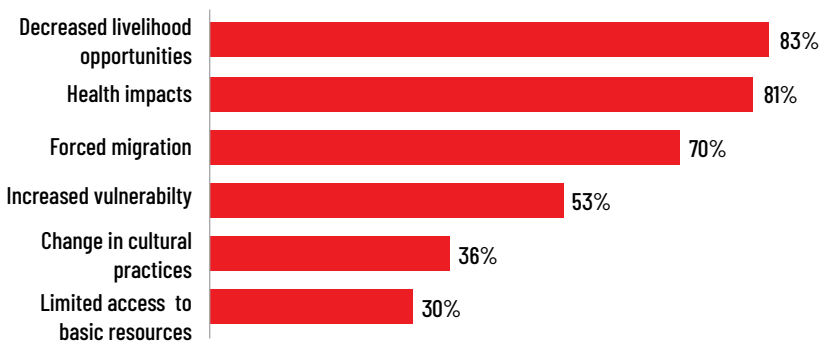
extreme weather events have disrupted work and increased their vulnerability to financial hardships. Hiramani Naware, 36, a sugarcane harvester and mother of three, brought attention to increased heart illnesses resulting from rising temperatures. The resulting medical expenses add a burden to the limited financial resources of the family. Lastly, Sharad Sabde, 50, a sugarcane worker from Hingoli, pointed out that more pesticides are needed in the field due to rising temperatures. The frequent use of strong chemicals puts the health of the workers at further risk.

The analysis of responses and focus group discussion provides an overview of the substantial and multifaceted financial strain that the community of sugarcane workers face. The findings shed light on the increased economic hardship resulting from reduced productivity, increased health expenses, and work disruption due to extreme weather events.

Social Impacts of Climate Change on Sugarcane Workers

This part of the report analyses the results of the survey on the social implications of climate change on the vulnerable group of sugarcane workers beyond occupational hazards and fiscal difficulties. A majority of the respondents (83%) conveyed that the failure of sugarcane crops, presumably due to climate change, has resulted in limited opportunities

Figure 3.19: Social Impacts of Climate Change on Sugarcane Workers



for sustaining livelihood and has impacted social and economic well-being. This can lead to an escalation of socioeconomic disparities and result in social instability in the community. Also, 81% of respondents reported that climate change-induced erratic weather events such as floods, droughts, and heatwaves have impaired the health of sugarcane workers, affecting their ability to work and their social life. Illness and injuries impede their capacity to provide for their families and maintain social relationships, thus exacerbating their social predicament.

Forced migration due to climate change-led environmental degradation and land loss was also factored in by 70% of the workers. This migration, which is often involuntarily, has weakened social ties and community structures and resulted in psychological and emotional strain on the displaced workers. An alarming 53% expressed increased vulnerability to exploitation and marginalization because climate change has curtailed their access to resources and support mechanisms. This reveals how climate change can augment the social susceptibility of already marginalized populations and further social inequity.

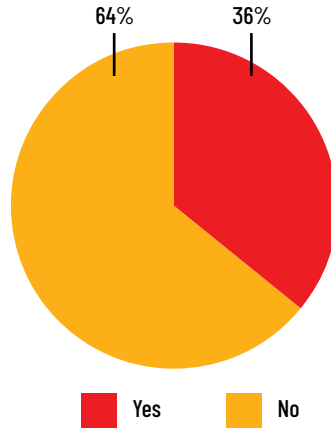
Another 36% of workers reported experiencing changes in cultural practices due to climate change. For example, variations in weather patterns affect the timing and frequency of harvest rituals and festivals, thereby altering social dynamics within the community. Also, 30% of the respondents highlighted limited access to basic resources like healthcare and food security due to climate change-induced shortages. This can lead to tensions and conflicts among sugarcane workers, who are already grappling with poverty.

The analysis of the survey data reiterates the intersectionality of climate justice, resource scarcity, and social conflict, which negatively affects the overall well-being of the community. It attests to the pervasive social implications of climate change on sugarcane workers and substantiates the argument that climate change and social outcomes are interlinked.

Employer's Actions on Worker Protection from Climate Change

the necessary protections required to ensure worker safety and the measures that are being provided by their employers.

Figure 3.20: Employer's Action on Worker Protection from Climate Change



However, 36% of the workers believe that their employers are taking some steps to mitigate climate change impacts. During focus group discussions (FGDs), it was revealed that what the workers believe to be employer support is limited and irregular support coming through Mukadam (labour contractors).

Arranging Space for Small Tents: Employers, via Mukadam, arrange space for workers to put up small tents. This offers some degree of shelter from extreme weather conditions like heat waves, though this is neither consistent nor sufficient.

Provision of Tent Materials: Employers provide materials such as plastic sheets and bamboo poles for make-shift tents, but these materials are often sold to the workers and it adds to their financial burden.

Access to Drinking Water: Efforts are made to ensure drinking water is available nearby. While this is a basic provision, its implementation is not guaranteed.

Medical Assistance in Severe Conditions: In cases of severe health issues arising from climatic conditions, employers assist workers in reaching a doctor. However, this assistance is sporadic and not a part of a structured support system.

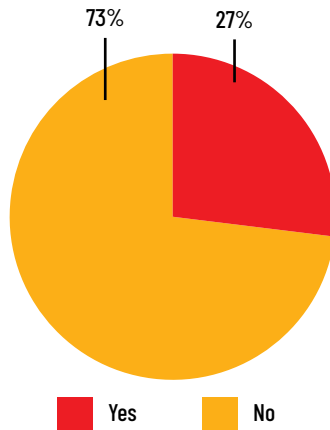
In a work environment like sugarcane harvesting, where exposure to outdoor climatic conditions is inherent to the nature of work, the lack of sufficient protective measures provided by the employer exacerbates the susceptibility of the workforce to climate change impacts.

Government’s Response to Climate Change Impact on Sugarcane Workers

In the analysis of the government’s response to the climate change impact on sugarcane workers, we found that 73% of surveyed workers believe that the government and local authorities are not taking sufficient initiatives to address the repercussions of climate change on their livelihoods. This percentage reflects a deep-seated sense of disillusionment and concern about the adequacy of governmental and local interventions to safeguard the well-being of sugarcane workers.

These responses suggest that a large majority of the surveyed sugarcane workers are not satisfied with the government and local authorities’ response to the climate change-related challenges they face. This brings focus to the urgent need for reassessing and intensifying climate change policies to curb its impacts on marginalized communities. While the Maharashtra government has introduced some initiatives aimed

Figure 3.21: Government’s Response to Impact of Climate Change on Sugarcane Worker



at improving the welfare of sugarcane workers, these efforts still have scope for improvement.

Maharashtra Government Welfare Board for Sugarcane Workers

In 2017, the Maharashtra government established the Maharashtra Government Welfare Board for Sugarcane Workers to provide social security benefits. Key features of this board include:

Employees' Provident Fund (EPF): It mandates savings that can be accessed upon retirement or job termination, thereby providing some financial security.

Employees' State Insurance Corporation (ESIC): It covers medical expenses and offers sickness benefits to workers and their families, which provides some health insurance and medical benefits.

Despite these efforts, the specifics of the board's functioning and the comprehensive list of schemes offered are still unclear. Consequently, the actual impact of these measures on improving the conditions of sugarcane workers remains limited.

Ashram Schools for Children of Sugarcane Workers

The government operates ashram schools to support the education of sugarcane workers' children. These schools are intended to provide education and basic living expenses, such as residential facilities, food, clothing, and accommodation. This ensures that children can access continuous education despite their parents' migratory work patterns.

Lack of Focus on Climate Change Impact

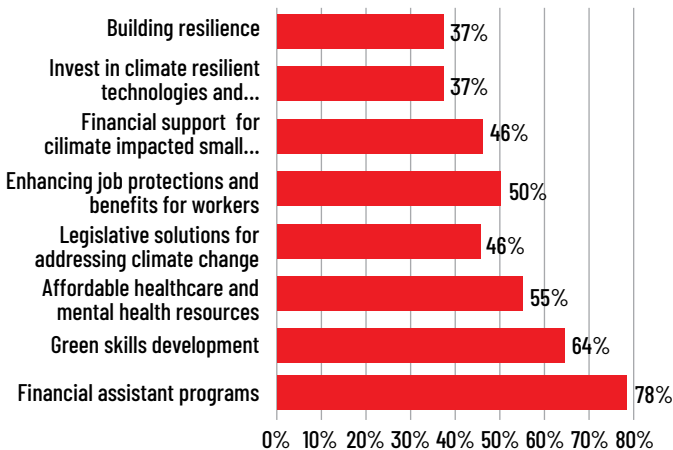
The government's initiatives for sugarcane workers do not specifically address the impacts of climate change. This oversight results in dire consequences, as climate change poses severe risks to agricultural workers, including sugarcane workers, by affecting crop yields, water availability, and working conditions. There is a pressing need for policies that consider these impacts and strive to mitigate them.

While the Maharashtra government has taken some steps to address the welfare of sugarcane workers, these measures are still insufficient, given the severity of conditions that these workers endure. Moreover, the lack of focus on the impact of climate change underscores the need for a more comprehensive and targeted approach to support this vulnerable group.

Optimal Government Support for Climate-Impacted Workers

The analysis of the responses to the question of existing government measures will be helpful in creating systems that protect sugarcane workers from the impacts of climate change. Understanding the needs and expectations of the target population will be helpful in creating such mechanisms. A majority of respondents (78%) identified the need for financial assistance to help them find sustainable jobs. The transition to sustainable job options is seen as an important step towards future-proofing the workforce against the continuous degradation of climate conditions. Participants of FGDs highlighted that financial assistance programs should be designed to cater to the diverse needs of workers. Some even suggested that direct cash transfers, microloans, or

Figure 3.22: Optimal Government Support for Climate-impacted Workers



subsidies for green technology adoption could be highly effective in alleviating their condition.

Furthermore, 64% of respondents emphasized the importance of education and training programs tailored to instil new skills pertinent to green jobs. During focus group discussions, many workers stressed the need for localized training centres that provide accessible and relevant courses. “It’s crucial that training is practical and fits our schedules. We need to learn skills that are in demand in our local areas,” one worker remarked. Another added, “Government should partner with industries to ensure the training aligns with actual job opportunities.” These points demonstrate the understanding of workers about the importance of capacity-building measures that can empower them to adapt to the changing climate conditions.

The physical and emotional toll of climate change is recognized by workers, with 55% of respondents advocating for an expansion in the accessibility of affordable healthcare, including mental health resources. Many participants in focus group discussions shared their personal experiences with stress and anxiety caused by climate uncertainties. One participant said, “The stress of unpredictable weather affects our health. We need arrangements like clinics that understand our specific needs, including mental health support.” Such findings present climate change not just as an environmental concern but as a public health issue as well.

Legislative action, such as the implementation of carbon pricing or regulations on greenhouse gas emissions to address the root causes of climate change, was suggested by 46% of respondents. Similarly, improved job protections and benefits, including paid leave and job security measures, were also recommended by 50% of the respondents. Workers expressed strong support for policies that hold industries accountable. “Big companies should pay for their pollution. We bear the brunt of climate change,” one worker argued, while another suggested the need for labour laws that ensure worker protection through measures like paid leaves.

Respondents (46%) expressed the necessity for grants or low-interest loans to support small businesses impacted by climate change, stressing the importance of financial instruments in ensuring the economic sustainability of these enterprises. Increased funding for research and development of climate-resilient technologies and infrastructure was deemed essential by 37% of respondents, echoing the growing consensus on the role of scientific innovation in mitigating climate impacts. Also, the same proportion of respondents (37%) discussed the importance of outreach and community engagement programs to educate workers and their families about climate change impacts and prepare them for emergencies.

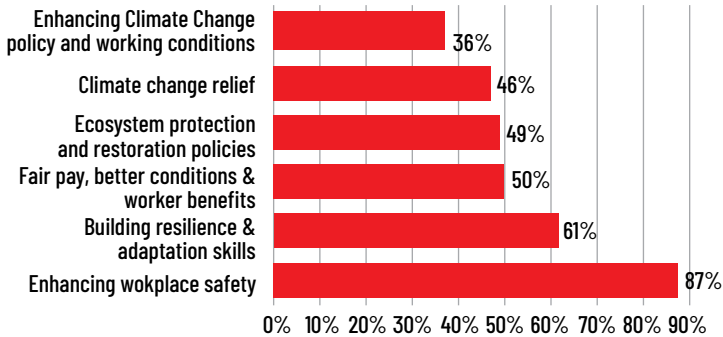
These detailed responses suggest the need for multidimensional strategies to adequately address the impacts of climate change on sugarcane workers. Their recommendations encompass economic, educational, healthcare, legislative, labour protection, financial support, research and development, and community engagement aspects. It denotes the agency of these informed workers in identifying and advocating for strategies they believe would effectively address their needs and aspirations in the face of climate change.

Effective Policy Changes for Climate Change Impact on Sugarcane Workers

The survey also posed the question of the efficacy of climate change-related policy changes that impact sugarcane workers. The analysis of the responses uncovers the perspective of sugarcane workers on policy changes that could soften the impacts of climate change on their livelihoods and well-being.

An overwhelming majority (87%) of respondents suggested implementing stricter regulations and enforcing workplace safety standards to protect them from heat-related illnesses. This response underlines the need for rigorous safety standards, like the provision of safety gear and access to clean drinking water, to ensure the well-being of workers. Concurrently, 61% of the respondents stressed the need for education and training programs for sugarcane workers that can foster resilience among workers.

Figure 3.23: Effective Policy Changes Resolving Impact of Climate Change on Sugarcane Workers



Half of the respondents emphasized the necessity of implementing policies that guarantee fair pay and better working conditions, such as access to healthcare, social security, paid sick leave, etc. Furthermore, 49% of respondents underscored the importance of implementing policies prioritizing protecting and restoring natural ecosystems. This sentiment is indicative of a broader understanding of the interlinkages between environmental conservation, climate risk management, and the well-being of sugarcane workers.

About 46% of respondents suggested the extension of financial support to sugarcane workers and their families to ensure financial security and strengthen their capacity to withstand and recover from climate-induced life changes. Lastly, 36% of respondents recommended establishing a system to monitor and report on the impacts of climate change on sugarcane workers, underlining the need for evidence-based policy ideation and execution to improve working conditions.

This provides an experience-based understanding of sugarcane workers' opinions on the required policy changes to bring forth climate action. The responses cover a range of policy areas, including safety regulations, education and training, fair pay and working conditions, environmental conservation, financial support, and evidence-based policymaking, highlighting the multi-dimensionality of the challenge at

hand. More importantly, the argument for the need for a holistic and inclusive approach to policy-making gets further corroboration.

Impact of Climate Change on the Sugarcane Supply Chain

In the sugarcane supply chain, the workers involved in the harvesting and production stage most profoundly bear the brunt of climate change. On-field sugarcane workers, who are integral to the initial stages of the sugar value chain, face direct exposure to environmental stresses caused by climate change, such as altered precipitation patterns, extreme weather events, and rising temperatures. These climatic challenges can lead to reduced sugarcane yields, impacting both the quantity and quality of the harvest. The vulnerability of these workers needs to be understood in context of their economic position. Their income is proportional to the quantity of their yield, and in seasons where climatic stresses cause lower yields or sugarcane workers get fewer harvesting days, workers suffer immediate financial consequences. In the absence of safety nets that other stakeholders in the value chain might have, such as diversified income sources or financial reserves, their position gets compromised the most.

Entities further down the value chain, such as sugar mills and distributors, are in a better position to absorb these shocks. They have broader operational frameworks and financial mechanisms that can provide a buffer against a few poor harvest seasons. For example, sugar mills might manage short-term decreases in supply by adjusting production schedules or drawing on stockpiled reserves. At the end of the chain, retailers have even greater flexibility to manage impact through pricing strategies and by shifting consumer demand to other substitutable products.

This disparity highlights a critical aspect of the sugarcane supply chain: while the effects of climate change are felt across the board, the ability to emerge unscathed from these effects is unevenly distributed. It places a disproportionate burden on the most vulnerable workers at the front end of the value chain. The following statistical data will further illustrate the point. During the fiscal years 2021-2022 and 2022-2023,

despite climate impact challenges at the production stage, India's sugar industry, particularly the owners of sugar mills, witnessed significant revenue growth. In 2021-2022, revenue growth was projected at 5-7%⁷, driven by strong export demand and domestic consumption. The following year saw an even higher expectation of 8-12% growth⁸, supported by stable sugar prices globally and domestically, along with a surge in ethanol production, which significantly boosted mill revenues. This growth contrasts sharply with the precarious situation of sugarcane workers, underscoring the urgent need for equitable policies that address the economic, human, and environmental costs of the sugar industry.

7. <https://www.6wresearch.com/industry-report/india-sugar-market-2020-2026>

8. <https://www.en.krishakjagat.org/agriculture-industry/sugar-mills-likely-to-report-8-12-rise-in-revenues-in-fy23-report/>

Chapter 4

Conclusions and Recommendations

The survey findings reveal that sugarcane workers perceive that they have been significantly impacted by climatic changes in recent years, particularly increased temperatures, erratic rainfall, and extreme weather events. A substantial portion of surveyed workers reported unbearable heat, which can not only affect their livelihoods. Erratic monsoon rainfall, as described by workers, has disrupted the critical crop cycle and continues to pose a risk to workers' income. These workers, who predominantly belong to already marginalised communities, believe they face a growing threat to their economic stability in years ahead, as they feel more vulnerable to extreme weather events.

Factors arising from climate change-induced shifts in weather patterns, such as increased temperatures and unpredictable rainfall, can directly impact sugarcane growth, reduce yields, and shorten the harvesting season. This can result in decreased labour productivity and wages, further destabilizing the financial situation of the workers. Climate-induced shorter workdays and erratic weather have led to significant income loss, which can push those whose annual income is heavily dependent on earnings made from the sugarcane harvest deeper into poverty and debt. These challenges highlight the urgent need for comprehensive strategies to mitigate the impacts of climate change on sugarcane workers, including improved healthcare, financial support, and effective climate adaptation measures.

In this chapter we outline a comprehensive set of recommendations to address the pressing challenges sugarcane workers face due to climate change. These recommendations include immediate health and safety measures, income security, legal rights, adaptive strategies, and overall improvements in working conditions. They aim to create a safer, more secure, and resilient working environment for sugarcane workers, addressing immediate and long-term needs.

1. Immediate Health and Safety Needs

Addressing immediate health and safety needs involves conducting comprehensive climate impact assessments, providing heat stress mitigation facilities, and ensuring accessible and informed healthcare services for sugarcane workers.

- 1.1 Comprehensive Climate Impact Assessment: Conduct detailed assessments to understand the specific impact of climate change on sugarcane workers, including the nature and extent of the damage caused.
- 1.2 Heat Stress Mitigation Facilities: Provide on-site heat stress mitigation facilities, such as cooling stations and potable water supplies, to protect workers during extreme heat events.
- 1.3 Healthcare Access and Awareness: Ensure comprehensive healthcare access, including education and awareness on climate-related health risks and the available support for managing these conditions.

2. Income Security and Employment Stability

Economic security is critical to ensuring the well-being of sugarcane workers, particularly in the face of climate change and economic uncertainties. The following recommendations aim to provide a robust framework for supporting workers' financial and employment needs:

- 2.1 Employment Security Programs: Integrate workers into employment-based programs, guaranteeing a minimum number of workdays and fair wages to stabilize income during climate-induced low-yield periods.
- 2.2 Guaranteed Minimum Income: Implement policies that guarantee a minimum income for agricultural workers, providing financial stability even during crop failures due to extreme weather conditions.

- 2.3 Flexible Work Arrangements: Adopt flexible work arrangements that allow agricultural workers to adjust their work hours or locations based on weather conditions and personal needs.
- 2.4 Loss and Damage Compensation: Develop mechanisms to compensate workers for losses resulting from climate-related events, such as crop failures or extreme weather conditions.

3. Legal Rights and Protections

Ensuring appropriate legal rights and protections for sugarcane workers is essential to mitigate the adverse impacts of climate change. Key recommendations in this area include:

- 3.1 Policy Framework Development: Enact comprehensive policies that address the specific climate change impacts on sugarcane workers. This includes ensuring legal and institutional frameworks are in place for providing compensation and implementing adaptive measures.
- 3.2 Enhanced Legal Rights: Implement and enforce laws that strengthen workers' rights and protections, ensuring they have access to natural resources, fair labour conditions, and protection from exploitation.
- 3.3 Legal Advocacy and Support Services: Provide legal advocacy and support services to help workers navigate the complexities of claiming damages and compensation related to climate impacts.

4. Need for Long-Term Resilience

To ensure the long-term sustainability and resilience of sugarcane workers' livelihoods in the face of climate change, adaptive strategies and resilience building are essential. These strategies focus on equipping workers with the necessary resources, infrastructure, and skills to withstand and adapt to the adverse effects of climate change.

- 4.1 Climate Adaptation and Mitigation Funding: Allocate resources to implement targeted climate change adaptation and mitigation

strategies, including the promotion of sustainable agricultural practices and climate-resilient infrastructure.

- 4.2 Infrastructure Development: Invest in climate-resilient infrastructure, such as advanced irrigation systems and flood defenses, to safeguard workers and their livelihoods from the adverse effects of extreme weather events.
- 4.3 Training and Capacity Building: Invest in educational programs and capacity-building initiatives to enhance workers' skills in climate resilience, sustainable agriculture, and resource management.

5. Fair Labour Practices

Ensuring fair labour practices is essential for improving the well-being of sugarcane workers. The following recommendations focus on creating equitable working conditions and providing comprehensive support to address the challenges posed by climate change:

- 5.1 Transparent Recruitment Process: Establish a transparent and fair recruitment process to prevent Mukkadams (contractors) from forming arbitrary groups. Workers should be grouped based on mutual consent and familiarity, facilitating resilience building and mutual support in facing climate-induced work disruptions.
- 5.2 Standardized Wage Rates: Implement standardized wage rates for cane harvesters that align with the minimum wage set by the Government of India for agricultural labour. These rates should account for the additional labour demands and health risks posed by increasingly unpredictable and extreme weather patterns, ensuring fair compensation for the increased challenges.
- 5.3 Regulated Working Hours: Regulate working hours to ensure that sugarcane workers are not overworked, particularly during extreme weather conditions exacerbated by climate change, such as heat waves or heavy rains. Compensation for overtime work should be adjusted to reflect these additional risks.
- 5.4 Leave Entitlements: Guarantee leave entitlements for workers, including provisions for climate-related disruptions such as floods

or heat-related illnesses. This includes sick leaves and emergency leaves without unjustified wage deductions.

- 5.6 **Transparent Wage Settlement:** Mandate a transparent wage settlement process that considers environmental factors affecting crop yields and working conditions. Workers should receive a detailed breakdown of their earnings and deductions, with clear and transparent adjustments for climate-related impacts.
- 5.7 **Grievance Redressal Mechanism:** Establish a robust grievance redressal mechanism with specific provisions for issues related to environmental and climate change impacts on working conditions. This mechanism should be accessible to workers and efficient in resolving disputes related to climate-related grievances.
- 5.8 **Skill Development and Livelihood Progression:** Provide skill development programs and opportunities for livelihood progression beyond cane harvesting, including training in sustainable agricultural practices and alternative income-generating activities that are less dependent on climate-sensitive sectors.
- 5.9 **Debt Relief Programs:** Introduce debt relief programs that consider the financial vulnerabilities caused by climate change, such as crop failures or reduced work hours due to extreme weather. These programs may involve financial counselling, debt restructuring, and support for sustainable alternative livelihood opportunities less reliant on climate-sensitive sectors.

6. Improving the Working Conditions and Safety

Decent working conditions of sugarcane workers are essential for ensuring their well-being and productivity. This includes:

- 6.1 **Provision of Protective Gear:** Provide workers with essential protective equipment, such as gumboots and warm clothing, to safeguard against potential hazards during the cane cutting and loading process. Additionally, address the impact of increasing temperatures and unpredictable weather patterns by supplying UV-protective gear and hydration kits to prevent heat-related illnesses.

- 6.2 Access to Medical Facilities: Offer comprehensive medical facilities at subsidized cost to all sugarcane workers, ensuring immediate access to healthcare services when needed. Expand services to include treatment for climate-related health issues such as heat stroke, respiratory problems due to air quality, and infections from increased vector populations.
- 6.3 Accidental Insurance Coverage: Implement a robust accident insurance policy for sugarcane workers, providing financial security and support in work-related accidents exacerbated by extreme weather events associated with climate change.
- 6.4 Cattle Insurance: Introduce insurance schemes specifically designed to protect the livestock of workers, ensuring compensation for any loss or damage to their cattle, which are often a crucial part of their livelihood. These coverages should take climate-related incidents such as floods, droughts, and heatwaves into account as well.
- 6.5 Provision of Essential Amenities: Guarantee the availability of basic amenities, including clean drinking water, proper sanitation facilities, adequate lighting, and suitable accommodation, at all work sites to ensure a safe and healthy working environment.
- 6.6 Improved Safety Measures for Women Workers: Implement stringent safety protocols for the loading process, especially during late evenings. This should include well-lit working areas, secure and non-slippery ladders, and the provision of safety harnesses to prevent falls and injuries. Regular safety audits should assess risks that may be intensified by climate change, such as increased rainfall or storms that may affect the infrastructural vulnerability of their workplaces.
- 6.7 Prohibition of Child Labour: Enforce a strict ban on child labour in all sugarcane cutting and loading processes. Ensure that climate change does not exacerbate the economic conditions, such as displacement and loss of property caused by extreme weather conditions, that often lead to child labour.
- 6.8 Protection for Children: Implement child protection measures, including the provision of safe and supervised areas for children

who accompany their parents to the field. Equip these areas with educational and recreational facilities that can serve as emergency shelters in case of sudden climate-related events.

- 6.9 Reporting and Documentation of Accidents: Establish a mandatory reporting system for all accidents and injuries involving workers, emphasizing documenting incidents that may be linked to climate change, such as injuries during extreme weather events.
- 6.10 Alternatives to Head Loading: Explore and implement alternative methods for loading sugarcane that reduce the physical strain and risk of accidents for women workers and consider the increasing mechanization as a means to reduce human exposure to harsh climatic conditions.
- 6.11 Awareness and Training Programs: Conduct regular awareness and training programs for workers and contractors on safety practices, child protection, workers' rights, and adapting to climate change impacts. These programs should aim to foster a culture of safety and environmental awareness.
- 6.12 Monitoring and Enforcement: Establish a monitoring mechanism involving government authorities, labour unions, and civil society organizations to ensure compliance with safety regulations, labour laws, and environmental standards. Impose strict penalties on contractors and employers who violate these norms.

7. Comprehensive Support Systems

Effectively supporting sugarcane workers in the face of climate change and socio-economic challenges requires a comprehensive support system. This system should address various aspects of workers' lives, ensuring they have the tools and resources necessary to thrive despite adverse conditions.

- 7.1 Access to Modern Agricultural Technologies: Facilitate access to modern, climate-resilient agricultural technologies and machinery, which can help workers maintain productivity despite variable climatic conditions.

- 7.2 Disaster Preparedness Training: Offer regular disaster preparedness and response training to agricultural workers, equipping them with the skills needed to handle emergencies like floods or droughts safely.
- 7.3 Stress and Mental Health Programs: Develop and implement stress management and mental health support programs tailored to agricultural workers, recognizing the psychological impact of climate uncertainty on their well-being.
- 7.4 Enhanced Weather Forecasting Services: Improve access to localized and accurate weather forecasting services, enabling workers to better plan and protect their activities and livelihoods from sudden climatic changes.

8. Effective Policy Inclusion

Provision at the level of policy is crucial for ensuring sustainable livelihoods and equitable growth for sugarcane workers. The following recommendations focus on fostering community engagement, addressing social inclusion, and incorporating workers' perspectives into policy-making processes:

- 8.1 Community and Stakeholder Engagement: Foster strong community networks and engage stakeholders in collaborative efforts to address climate change impacts, ensuring a cohesive approach to adaptation and mitigation.
- 8.2 Social Inclusion and Equity Programs: Implement programs that specifically address the needs of marginalized groups within the agricultural workforce, including women, indigenous peoples, and migrants, ensuring equitable access to resources and opportunities.
- 8.3 Inclusive and participative policy-making: Engage workers in climate change policy discussions, ensuring their perspectives and needs are incorporated into decision-making processes. Encourage the participation of agricultural workers in local and national decision-

making forums that pertain to climate change and agricultural policies, ensuring that their voices are heard.

9. Ensuring Livelihood Sustainability

Securing the long-term economic well-being of sugarcane workers requires implementing measures that provide financial stability and continuous employment opportunities. The following recommendations focus on enhancing access to welfare programs and creating sustainable livelihood options during off-seasons.

9.1 **Mandatory Registration for Welfare Programs:** The government should ensure the mandatory registration of all sugarcane workers under the E-Shram scheme and other relevant welfare programs. This registration is crucial for facilitating their access to various government benefits and social security measures, thereby enhancing their overall well-being and financial stability.

9.2 **Off-season Employment Opportunities:** Government officials should ensure that sugarcane workers can benefit from the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) during the off-season to address the challenge of seasonal unemployment. This will provide them with a guaranteed source of income when they are not engaged in cane cutting, thus ensuring their livelihood sustainability throughout the year.

10. Expanding Social Security

Social security for sugarcane workers is essential to address the unique challenges and vulnerabilities associated with their nature of work. They often lack adequate social security, which leaves them vulnerable to financial instability and health risks. Enhancing their social security benefits is crucial for their well-being and overall quality of life.

10.1 **Food Security for Migrant Families:** Ensure that families of sugarcane workers are eligible for food security benefits through relevant programs, irrespective of whether they have migrated within the state or to a different state. This provision should apply uniformly to all sugarcane workers, ensuring they have access to essential nutrition regardless of their location.

- 10.2 Specialized Housing Assistance: Offer specialized housing assistance to sugarcane workers under Government schemes such as the PMAY, Gharkul Yojana, etc. This initiative should aim to provide affordable and safe housing options for sugarcane workers and their families, recognizing the importance of stable and secure living conditions for their overall well-being.
- 10.3 Inclusion in EPF and ESIC: Ensure that all sugarcane workers are covered under social security schemes such as the Employees' Provident Fund (EPF) and the Employees' State Insurance Corporation (ESIC). This will provide them with financial security and access to healthcare services.
- 10.4 Establishment of a Welfare Fund: Address the funding concerns raised by the labour department by establishing a dedicated welfare fund for sugarcane workers. This fund should be supported by contributions from the government, industry stakeholders, and other relevant organizations.
- 10.5 Water and Sanitation Facilities: Ensure that all migrant settlements and work sites have access to clean drinking water and sanitation facilities to reduce the time and burden on children, especially girls, in fetching water in areas where climate conditions have caused water shortages.
- 10.6 Strengthening Legal Frameworks: Strengthen and enforce legal frameworks that protect the rights of migrant children, including the Right to Education Act, the Child Labour (Prohibition and Regulation) Act, and other relevant legislation.

11. Education and Child Rights

Ensuring Education and Rights for the children of sugarcane workers is crucial for their development and future opportunities. This section focuses on specific measures to support the education and well-being of children from sugarcane worker families, especially during migration.

- 11.1 Specialized Education Programs: Develop specialized education programs that cater to the unique needs of migrant children,

including bridge courses, mobile schools, and digital learning platforms that can provide continuous education regardless of their location.

- 11.2 Ensuring Continuous Schooling: Guarantee that children of sugarcane workers receive uninterrupted, compulsory education at their destination. This includes providing access to local schools, facilitating the smooth transfer of school records, and offering support services to help children adapt to new educational environments.
- 11.3 Seamless School Reintegration: Implement policies and programs that facilitate the smooth reintegration of migrant children into their local schools upon returning to their villages. This includes relevant academic support to help them catch up on missed lessons and flexible admission policies to prevent dropouts due to non-attendance.
- 11.4 Enhanced Support for Shakhar Shalas and other farm site schools: Ensure that Shakhar Shalas and other farm site schools are adequately funded, equipped, and staffed to provide quality education to the children of sugarcane workers, especially during the migration season. Regular monitoring and evaluation should also be conducted to ensure the effectiveness of these institutions and hold sugar mills accountable for their operations.
- 11.5 Child Labour Prevention: Enforce strict regulations to prevent the involvement of children in sugarcane cutting and other forms of labour. Regular inspections, penalties for violations, and awareness campaigns about the harmful effects of child labour on education and well-being are some of the ways to achieve this.
- 11.6 Addressing Gender Disparities: Implement targeted interventions to address the additional barriers faced by adolescent girls, such as providing safe transportation, separate sanitation facilities, and addressing the burden of care work and household chores.
- 11.7 Enhanced Access to Anganwadi Centres: Ensure that Anganwadi Centres are readily available at all migration destinations to provide

essential health, nutrition, and early education services to children of migrant families, including those of sugarcane workers. These centres should also be equipped to cater to the unique needs of migrant children, ensuring a seamless integration into their new communities.

- 11.8 Access to Residential Schools: Facilitate the availability of residential schools for children from migrant sugarcane workers' families. These schools should provide a stable and supportive environment for children to live and study, mitigating the disruptions caused by frequent migrations and ensuring their education remains a constant priority.
- 11.9 Scholarship Opportunities: Given the socio-economic challenges faced by the children of sugarcane workers, it is important to provide them with financial assistance to aid their education. Needs-based and merit-based financial assistance can be a few ways to achieve this. These scholarships can be designed to cover a range of educational expenses, including tuition fees, books, and other learning materials, thereby encouraging continued education and opening up avenues for higher studies and future opportunities.

12. Empowering Women and Girls

Gender empowerment in Sugarcane Farms is essential for promoting gender equality and enhancing the well-being of the entire workforce. This section highlights specific measures to support female workers and ensure they receive the necessary healthcare, safe working conditions, and equal employment opportunities.

- 12.1 Sanitation and Hygiene at Workplaces: Provide clean and hygienic toilets exclusively for women at the workplace, along with a continuous supply of safe drinking water. This is crucial for maintaining their health and dignity, especially for pregnant women with specific sanitary needs.
- 12.2 Childcare Support at Work: Establish crèche facilities at the workplace for children under the age of five. This will enable

working mothers to focus on their work without worrying about their children's safety and care, thereby supporting their continued employment.

- 12.3 Comprehensive Healthcare for Women: Ensure that pregnant women and lactating mothers among the sugarcane workers are able to access the full range of healthcare benefits. This includes regular medical check-ups, nutritional supplements, and access to maternal health services to ensure their well-being and that of their infants.
- 12.4 Preventing Sexual Harassment: Effectively implement the Sexual Harassment of Women at Workplace (Prevention, Prohibition, and Redressal) Act, 2013, to create a safe and respectful work environment for female sugarcane workers. Some of the ways to achieve this include activating local committees to handle complaints conduct awareness programs to educate workers about their rights and the mechanisms available for grievance redressal.
- 12.5 Ensuring Equal Pay: Guarantee that women receive equal wages for their work, in accordance with the principle of equal pay for equal work. This is essential to address gender-based wage discrimination and to ensure that women are fairly compensated for their contributions to the workforce.
- 12.6 Equal Employment Opportunities: The government should implement policies that guarantee equal employment opportunities for all women, irrespective of their marital status or the presence of a male family member. This might involve abolishing the jodi practice or introducing alternative hiring practices that do not discriminate against single women or those without a male partner.
- 12.7 Individual Wage Payments: The government should confirm the payment of wages on an individual basis rather than as a couple to ensure that women have direct control over their earnings. This policy will strengthen their financial independence and increase their bargaining power within the household.

- 12.8 **Transparency in Wage Distribution:** Government officials should establish transparency in wage distribution, with clear documentation and acknowledgment of each worker's contribution, to prevent wage discrimination and ensure fair compensation for women.
- 12.9 **Childcare Facilities:** Employers and Mukkadam should establish functional crèche and Anganwadi facilities at or near sugarcane farms to provide safe and nurturing environments for children while their mothers are working. This will also help reduce the dropout rates of girls from schools, as girls are most often expected to tend to their infant siblings while mothers are out working in sugarcane farms.

13. Improving Sexual and Reproductive Health

Sexual and reproductive health and rights are a cause of concern among female sugarcane workers, and is important to ensure their overall well-being, productivity, and empowerment. Addressing these issues enhances women's ability to make informed decisions about their health, family planning, and work thus, contributing to a healthier workforce. Some of the ways in which this can be achieved is recommended below:

13. **Health Education and Awareness:** Launch relevant health education initiatives to raise awareness about sexual and reproductive health, including the prevention and treatment of common infections like Leucorrhoea, PID, and Vaginitis. These programs should also address the importance of regular medical check-ups and early treatment.
- 13.2 **Menstrual Hygiene Management:** Implement comprehensive menstrual hygiene management programs that provide access to sanitary pads, clean water, and safe disposal methods. Additionally, conduct awareness campaigns to educate women workers about menstrual hygiene practices and the importance of using sanitary products.

- 13.3 Access to Medical Services: Improve access to public health facilities in source villages and near labour camps, ensuring that workers can receive timely and appropriate medical treatment. This includes providing mobile health clinics and telemedicine services to reach remote areas.
- 13.4 Training for Healthcare Providers: Train local healthcare providers, including gynaecologists and community health workers, on the specific health needs of migrant women workers. This training should emphasize respectful and non-discriminatory treatment, as well as the dangers of unnecessary medical procedures like hysterectomies.
- 13.5 Nutritional Support: Implement programs to address malnutrition and anaemia among women workers by providing access to nutritious food and supplements, especially during pregnancy and menstruation.
- 13.6 Regulation of Private Healthcare Practices: Establish strict regulations and oversight mechanisms to prevent exploitation by private health practitioners and hospitals, particularly concerning unnecessary hysterectomies. This should include legal actions against practitioners who deceive or coerce women into undergoing unwarranted surgeries.
- 13.7 Financial Assistance for Medical Expenses: Provide financial assistance or health insurance coverage to workers for medical expenses, including surgeries, to reduce dependence on wage advances from contractors and prevent debt bondage.

14. Maternity Benefits

Providing maternity benefits to women sugarcane workers is essential for safeguarding their health, ensuring maternal and child well-being, and promoting gender equality in the workforce. Access to maternity benefits enables women to receive adequate prenatal care, support during childbirth, and postnatal assistance, reducing maternal mortality and promoting healthier families. Additionally, maternity benefits

contribute to retaining female workers in the sugarcane industry, thus supporting their economic empowerment.

- 14.1 **Enforcement of Maternity Benefits:** Ensure strict enforcement of the Maternity Benefit (Amendment) Act 2017 for women workers in the sugarcane industry. This includes providing paid maternity leave of 26 weeks, which is essential for the health and well-being of the mother and the child, along with other provisions of the act.
- 14.2 **Provision of Postpartum Leaves:** Mandate a minimum maternity leave of six weeks post-partum for all women workers, with full pay, to ensure adequate recovery time after childbirth. This leave should not be considered as leave without pay.

15. Need to Address Needs of Particularly Vulnerable Groups

We have seen cases where sugarcane workers belong to marginalized communities with limited access to resources. As a result, their challenges become more severe, given their experiences of exclusion. Therefore, it becomes necessary to formulate targeted interventions to address challenges faced by workers from marginalized communities. Some of the interventions that can be proposed are as follows:

- 15.1 **Land Rights and Ownership:** Ensure the legal recognition and ownership of land for marginalized communities, with a focus on providing cultivable land to those who currently possess only small or uncultivable parcels. Implement land reform policies that prioritize the distribution of unused public land to Dalits, Tribals, Nomadic Tribes and De-Notified Tribes (NTDNTs) also known as Vimukt Jatis and Nomadic Tribes (VJNTs), and other historically marginalized communities for agriculture and cattle grazing.
- 15.2 **Water Access, Equity, and Infrastructure Management:** Develop and implement a fair water distribution system to ensure all access to clean drinking water while addressing contamination issues. Enhance public water supply infrastructure and actively involve

marginalized communities in water management decisions to ensure their needs and voices are heard.

- 15.3 Legal Protection and Redressal Mechanisms: Strengthen legal protections for marginalized communities against discrimination and violence related to land and water conflicts. Establish accessible and efficient mechanisms for reporting and redressing grievances related to land and water rights violations.
- 15.4 Expansion of MGNREGA: Policies aimed at expanding and effectively implementing the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) to provide more job opportunities for the local population should be implemented. This should ensure that a higher percentage of registered workers are employed under the scheme, with an increased number of workdays, higher wages, and timely payment.
- 15.5 Introduction of Alternative Livelihood Programs: High dependency on sugarcane farms makes workers more vulnerable to distress associated with climate change. The government should introduce alternative livelihood programs that leverage the skills and resources available in the region, particularly focusing on tribal communities engaged in forest produce. These programs could encompass initiatives in sectors such as animal husbandry, poultry farming, horticulture, small-scale industries, and sustainable harvesting of forest produce.
- 15.6 Credit access and debt relief measures: The government should implement debt relief measures for workers from marginalized groups, including waivers or restructuring of existing debts, particularly those incurred by local moneylenders at high interest rates. Additionally, the government should introduce low-interest credit facilities and formal banking services to prevent farmers from falling into a vicious cycle of debt traps.
- 15.7 Financial Literacy: Financial literacy programs can prove effective in educating workers about managing finances, accessing institutional credit, and avoiding exploitative lending practices.

Additionally, they can enhance the reach and accessibility of formal banking services in the region to provide fair credit options. The government, in partnership with civil society and NGOs, can do this.