

Displaced by Nature: Exploring the Impact of Climate Change on Scheduled Tribes Migration in India

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Abstract:- This article delves into the intricate relationship between climate change and the migration patterns of Scheduled Tribes (STs) in India. As climate change continues to escalate, indigenous communities, particularly STs residing in ecologically sensitive regions, are increasingly confronted with unprecedented challenges that disrupt their traditional way of life. This article examines the multifaceted impacts of climate change on STs, focusing on the drivers of migration, the challenges faced by displaced communities, and the urgent need for policy interventions to address these issues. Historically rooted in forested and hilly areas rich in natural resources, STs rely heavily on their surrounding ecosystems for sustenance, livelihoods, and cultural identity. However, rapid environmental degradation, exacerbated by climate change, has led to the loss of traditional livelihoods, resource scarcity, and heightened vulnerability to natural disasters among ST communities. As a result, many STs are forced to migrate in search of alternative means of survival, leading to socio-economic disruptions and cultural dislocation. Drawing on empirical evidence and case studies, this article highlights the various impacts of climate change on ST migration, including increased environmental vulnerability, loss of access to resources, health risks, and socio-cultural upheaval. It underscores the urgent need for comprehensive policy interventions that prioritize the rights and well-being of indigenous communities, promote sustainable livelihoods, and foster resilience in the face of climate-induced displacement. By addressing the root causes of ST migration and ensuring inclusive and equitable development, India can pave the way for a more sustainable and resilient future for all its citizens.

Keywords:- Climate Change; Scheduled Tribes; Migration; Impact; Vulnerability; Policy Interventions.

I. INTRODUCTION

Climate change stands as one of the most pressing challenges of our time, transcending geographical boundaries and affecting every corner of the globe. Its impacts are diverse and multifaceted, ranging from rising sea levels to extreme weather events and from biodiversity loss to disruptions in

agricultural systems. Within this complex landscape of change, certain communities are disproportionately affected, particularly those who are marginalized and lack the resources to adapt effectively. In India, a country renowned for its cultural diversity and ecological richness, the impacts of climate change are keenly felt, especially among Scheduled Tribes (STs), who often find themselves on the frontlines of environmental degradation. Scheduled Tribes, commonly referred to as 'Vanvasi', are communities that have inhabited the Indian subcontinent for centuries, forming an integral part of its social fabric and cultural heritage. These communities have traditionally resided in ecologically sensitive areas such as forests, mountains, and coastal regions, where they have developed sustainable livelihoods and intricate relationships with their natural surroundings. However, the onset of climate change has disrupted these delicate balances, posing existential threats to the way of life of Scheduled Tribes across the country. One of the most visible manifestations of climate change's impact on Scheduled Tribes is the phenomenon of migration. As environmental conditions deteriorate and traditional livelihoods become increasingly untenable, many ST communities find themselves compelled to leave their ancestral lands in search of alternative means of survival. Climate change presents significant risks to the social, cultural, and economic cohesion of indigenous subsistence farmers, who have deep connections with their surrounding ecosystems. The Sauria Paharia community, an indigenous group in Jharkhand, India, are small-scale farmers confronting challenges of food and nutrition insecurity, compounded by their limited capacity to adapt to climate change (Ghosh-Jerath et al., 2021). This migration, whether temporary or permanent, represents a profound disruption to the social, cultural, and economic fabric of these communities, with far-reaching implications for their well-being and resilience.

This article seeks to explore the complex interplay between climate change and Scheduled Tribes migration in India, shedding light on the underlying factors driving this phenomenon and the challenges faced by migrant communities. By delving into the intricate nuances of this relationship, we aim to unravel the multifaceted impacts of climate change on STs, from loss of livelihoods to forced displacement, and from social exclusion to cultural erosion. Furthermore, we will examine the inadequacies of existing

policy frameworks in addressing the needs of migrant tribal populations and propose holistic interventions aimed at fostering resilience and empowerment. As we embark on this journey of exploration, it becomes increasingly clear that the plight of Scheduled Tribes displaced by nature's wrath demands urgent attention and concerted action. By understanding the intricacies of their experiences and amplifying their voices, we can work towards building a more equitable and sustainable future for all, where no community is left behind in the face of climate change's relentless march.

II. UNDERSTANDING CLIMATE CHANGE

Climate change represents arguably the most significant and intricate challenge ever faced by human social, political, and economic structures. Additionally, it poses a formidable obstacle to our comprehension of human reactions (Dryzek et al., 2011). Climate change refers to long-term shifts in global or regional climate patterns, primarily attributed to human activities altering the composition of the Earth's atmosphere. It is driven by the emission of greenhouse gases such as carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), primarily from burning fossil fuels, deforestation, industrial processes, and agriculture. These gases trap heat in the Earth's atmosphere, leading to the warming of the planet—a phenomenon commonly referred to as global warming. However, climate change encompasses more than just rising temperatures; it also entails alterations in precipitation patterns, sea levels, extreme weather events, and ecological systems, with profound implications for human societies and natural environments. At the heart of climate change is the enhanced greenhouse effect, whereby human-induced emissions of greenhouse gases intensify the natural greenhouse effect, resulting in increased heat retention in the Earth's atmosphere. This leads to a cascade of impacts across various components of the Earth system, including the atmosphere, oceans, land surfaces, and ice sheets. For instance, rising temperatures contribute to the melting of polar ice caps and glaciers, leading to sea-level rise and coastal erosion, threatening low-lying coastal communities and ecosystems. Moreover, changes in precipitation patterns result in altered water availability, affecting agricultural productivity, freshwater resources, and biodiversity.

The consequences of climate change are not evenly distributed geographically or temporally, exacerbating existing inequalities and vulnerabilities among different regions and populations. Developing countries, particularly those with limited adaptive capacity and socio-economic resources, are disproportionately affected by climate change, facing challenges such as food insecurity, water scarcity, and increased risk of extreme weather events. Within countries, marginalized communities such as indigenous peoples, rural populations, and urban poor are often the most vulnerable to climate change impacts due to their reliance on natural resources, inadequate infrastructure, and limited access to services. Climate change is not a distant or hypothetical threat

but a present-day reality with far-reaching implications for human societies and ecosystems. Its impacts are already being felt across the globe, from shrinking ice caps in the Arctic to more frequent and intense heatwaves, storms, and droughts in various regions. These changes pose significant risks to human health, livelihoods, infrastructure, and biodiversity, necessitating urgent action to mitigate emissions, adapt to changing conditions, and build resilience at local, national, and global levels. Over the past few years, we have witnessed a series of unprecedented extreme weather occurrences, which were forecasted by scientists decades ago. These events include heatwaves, droughts, wildfires, powerful storms, and storm surges. Meteorologist and former hurricane tracker Dr. Jeff Masters remarked in 2012 that the current atmospheric conditions are unlike those he experienced in his youth. There is an increasing volume of scientific research indicating that greenhouse gas emissions are fundamentally changing the climate and significantly increasing the likelihood of various types of extreme weather events (Romm, 2022). Addressing climate change requires collective and coordinated efforts across sectors and scales, involving governments, businesses, civil society, and individuals. This entails transitioning to low-carbon and climate-resilient economies, investing in renewable energy, sustainable agriculture, and ecosystem restoration, and implementing policies to reduce emissions and promote adaptation. Furthermore, enhancing international cooperation and solidarity is essential to support vulnerable countries and communities in adapting to climate change impacts and achieving sustainable development goals in a warming world.

III. UNDERSTANDING SCHEDULED TRIBES MIGRATION

Scheduled Tribes (STs) form an integral part of India's demographic landscape, representing diverse indigenous communities with unique cultural identities and traditions. These communities have historically inhabited forested, mountainous, and other ecologically sensitive regions of the country, forging deep-rooted connections with their land and natural surroundings. For generations, STs have relied on the rich biodiversity and natural resources of these areas for their livelihoods, sustenance, and cultural practices. The traditional way of life among Scheduled Tribes is deeply intertwined with nature, with livelihood activities such as agriculture, fishing, hunting, gathering, and pastoralism forming the backbone of their economic activities. These communities have developed intricate knowledge systems, passed down through generations, which enable them to sustainably manage their environments and adapt to local ecological conditions. Moreover, their cultural practices, rituals, and belief systems are often intricately linked to the natural world, reinforcing their sense of identity and belonging to their ancestral lands. However, the onset of rapid environmental degradation and the adverse impacts of climate change have posed unprecedented challenges to the traditional way of life of Scheduled Tribes in India. The degradation of forests,

depletion of natural resources, loss of biodiversity, and changes in weather patterns have profoundly affected the ecosystems upon which STs depend. Deforestation, driven by factors such as logging, mining, industrialization, and agricultural expansion, has led to habitat loss and fragmentation, disrupting wildlife habitats and diminishing the availability of forest products for tribal communities. Tribal communities are spread across vast regions of the country, particularly in mountainous areas abundant in mineral and forest resources. Forests and hills form the core of their socio-cultural and spiritual identity, as well as their means of livelihood and survival. However, the conversion of land for development projects jeopardizes tribal livelihoods nationwide, resulting in displacement or forced relocation from their ancestral lands (Mistri & Singh Sardar, 2023).

Furthermore, climate change-induced phenomena such as erratic rainfall, droughts, floods, cyclones, and heatwaves have exacerbated these environmental challenges, making it increasingly difficult for STs to sustain their livelihoods. Agriculture, which forms the primary source of income for many tribal households, is particularly vulnerable to climate variability, with unpredictable weather patterns leading to crop failures, reduced yields, and loss of agricultural productivity. Similarly, fluctuations in rainfall patterns affect water availability for irrigation, drinking, and domestic purposes, further exacerbating water scarcity in tribal areas. The impacts of environmental degradation and climate change are not limited to economic spheres but also extend to the socio-cultural fabric of ST communities. Displacement from their ancestral lands, loss of traditional livelihoods, and degradation of natural resources have profound implications for the social cohesion, cultural identity, and well-being of tribal populations. Forced migration, whether temporary or permanent, disrupts established social structures, kinship networks, and community relations, leading to social disintegration and loss of cultural heritage. Moreover, the erosion of traditional knowledge systems, rituals, and practices associated with land-based livelihoods undermines the resilience of ST communities, making them more susceptible to external shocks and vulnerabilities.

In response to these challenges, many Scheduled Tribes find themselves compelled to migrate in search of alternative means of survival and livelihood opportunities. Internal migration from rural to urban areas, seasonal migration for wage labor, and displacement due to development projects or environmental hazards have become increasingly common among ST populations. However, migration itself poses new challenges, including discrimination, marginalization, and lack of access to essential services such as healthcare, education, and social welfare programs in destination areas. Scheduled Tribes in India are facing unprecedented challenges due to rapid environmental degradation and the adverse impacts of climate change. The disruption of their traditional way of life, loss of livelihoods, and forced migration are symptomatic of a broader crisis unfolding in tribal communities across the

country. Addressing these challenges requires concerted efforts to mitigate climate change, conserve natural resources, empower tribal communities, and promote sustainable development that respects the rights and aspirations of indigenous peoples. Only through inclusive and participatory approaches can we ensure the resilience and well-being of Scheduled Tribes in the face of environmental uncertainty and change.

IV. SCHEDULED TRIBES MIGRATION IN INDIA

According to the findings outlined in the "Report of the Expert Committee on Tribal Health 'Tribal Health in India' Bridging the Gap and a Roadmap for the Future," India is home to approximately 104 million tribal individuals, with the majority residing in ten states and in the North-East region. Nearly 90% of the tribal population resides in rural areas. Across the nation, there are 90 districts or 809 blocks where over 50% of the population is tribal, collectively constituting approximately 45% of the Scheduled Tribe (ST) population in India. Conversely, around 55% of the tribal population resides outside these 809 blocks with a majority tribal population (Ministry of Tribal Affairs, 2018).

According to the same report, based on the Census of 2011, over two-thirds of the tribal population is engaged in the primary sector, a significantly higher proportion compared to 43% of the non-tribal population. Agriculture serves as a crucial source of livelihood for tribal communities, with many working as either cultivators or agricultural laborers. However, there has been a notable shift within tribal communities from cultivation to labor-intensive agricultural work. A comparison between the Census data of 2001 and 2011 reveals a decline of over 10% in the proportion of cultivators among the Scheduled Tribe (ST) population, accompanied by a 9% increase in the proportion of agricultural laborers.

Over the past decade, it is estimated that approximately 3.5 million tribal individuals have transitioned from agriculture and related activities to seek employment in the informal labor market. Additionally, displacement and forced migration have led to a growing number of Scheduled Tribes engaging in contract labor within the construction industry and working as domestic workers in urban centers. Presently, one out of every two tribal households relies on manual labor as their primary means of sustenance.

Historically, internal migration within India has remained relatively low, with migration statistics indicating a continuous decrease in mobility until the early 1990s. However, data from the National Sample Survey for the years 1992-93 and 1999-2000 reveal a notable rise in mobility over the past decade. Moreover, census data indicates an increase in labor mobility, particularly migration driven by employment or work opportunities, during the same period. Temporary and seasonal migration plays a significant role in labor mobility

within a country experiencing a transition of its workforce from agriculture to industry and the tertiary sector (KESHRI & BHAGAT, 2010).

The constitutional provisions within Schedule V offer protections aimed at preventing the displacement of tribal populations due to land acquisitions and similar events. Under these provisions, the Governor of the State containing Scheduled Areas possesses the authority to prohibit or limit the transfer of land from tribals and oversee the allocation of land to members of Scheduled Tribes in such circumstances.

The government has also implemented various laws containing specific provisions addressing displacement, rehabilitation, and resettlement concerns of tribal communities. These laws include:

- The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.
- The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.

There exist multiple factors contributing to the migration of tribal populations overall, with particular emphasis on tribal women. Tribal migration is increasingly becoming prevalent across both rural and urban regions of India. But the Climate Change factor is prominent among them.

V. IMPACT OF CLIMATE CHANGE ON SCHEDULED TRIBES MIGRATION IN INDIA

Climate change exacerbates existing vulnerabilities faced by Scheduled Tribes, leading to displacement and migration. Rising temperatures, erratic rainfall patterns, and extreme weather events such as floods, droughts, and cyclones have profound implications for these communities. Agriculture, a primary source of livelihood for many tribal households, is severely affected, resulting in crop failures, food insecurity, and loss of income. Water scarcity further compounds these challenges, forcing communities to travel long distances in search of potable water. Natural disasters, intensified by climate change, often leave behind a trail of destruction, rendering homes uninhabitable and compelling families to flee to safer locations.

Certainly! Here are several key points elaborating on the impact of climate change on Scheduled Tribes migration in India:

A. Increased Environmental Vulnerability of Scheduled Tribes

Scheduled Tribes (STs) in India inhabit regions characterized by rich biodiversity and delicate ecosystems, including forests, mountains, and coastal areas. These environments are not only home to diverse flora and fauna but also serve as the primary source of sustenance, livelihoods, and cultural identity for ST communities. However, the very characteristics that make these areas ecologically rich also

render them highly vulnerable to the impacts of climate change. Forests, which constitute a significant portion of the habitat for many STs, are particularly susceptible to climate change-induced stressors. Rising temperatures, prolonged droughts, and changing rainfall patterns have profound effects on forest ecosystems, leading to increased frequency and intensity of wildfires, outbreaks of pests and diseases, and alterations in vegetation composition. These changes not only threaten the biodiversity of forests but also disrupt the traditional livelihoods and resource-dependent economies of ST communities, who rely on forest products for food, medicine, fuel, and shelter. The profound impacts of unparalleled climate change are rightfully recognized as a significant peril to humanity at large, especially to rural or indigenous populations. While the crisis has garnered global attention, the consistently adverse effects on indigenous communities in developing nations have not been accurately assessed. In India, these effects are anticipated to significantly affect the millions residing in the heartland of folk and tribal communities (Bandyopadhyay, 2019).

Mountainous regions inhabited by STs are also at heightened risk due to climate change impacts. Glacial retreat, attributed to rising temperatures, poses risks of flash floods, landslides, and glacial lake outburst floods (GLOFs), endangering lives and livelihoods in mountain communities. Changes in precipitation patterns, including reduced snowfall and erratic monsoons, affect water availability for drinking, irrigation, and hydropower generation, further exacerbating vulnerabilities in these regions. Coastal areas, home to many ST communities, face a myriad of challenges arising from climate change-induced sea-level rise, storm surges, and erosion. Coastal erosion threatens homes, infrastructure, and agricultural lands, forcing communities to relocate inland or seek alternative livelihood options. Moreover, saltwater intrusion into freshwater sources contaminates drinking water and renders agricultural lands unproductive, posing additional hardships for coastal STs who depend on agriculture and fishing for their subsistence. Overall, the increased environmental vulnerability of Scheduled Tribes in India underscores the urgent need for holistic and adaptive approaches to climate change adaptation and resilience-building. This includes strengthening the capacity of ST communities to cope with climate-related hazards, enhancing their access to climate-resilient technologies and infrastructure, and promoting sustainable land and resource management practices that safeguard both ecosystems and livelihoods. Additionally, ensuring the meaningful participation of STs in decision-making processes and policy formulation is essential to address their unique needs, perspectives, and rights in the context of climate change adaptation and mitigation efforts.

B. Disruption of Traditional Livelihoods

The disruption of traditional livelihoods among Scheduled Tribes (STs) in India due to climate change is a pressing concern with far-reaching implications. Many ST

communities have historically relied on age-old practices such as agriculture, forestry, fishing, and pastoralism for their sustenance and cultural identity. However, the onset of climate change has severely impacted these traditional livelihood patterns. Droughts, floods, and erratic monsoons, exacerbated by climate change, pose significant challenges to agricultural activities, which form the backbone of many ST economies. Erratic rainfall patterns and prolonged dry spells result in crop failures, leading to diminished food security and economic instability within ST communities. Additionally, floods and extreme weather events destroy crops, agricultural infrastructure, and livestock, further exacerbating the vulnerability of STs reliant on agriculture for their livelihoods. Forestry, another traditional livelihood practice among STs, is also under threat due to climate change-induced phenomena such as deforestation, forest degradation, and wildfires. These environmental changes not only diminish the availability of forest resources but also disrupt the intricate balance between humans and forests, undermining the cultural and economic significance of forestry for ST communities. The impact of climate change has compelled the local inhabitants to adapt their traditional ways of sustaining their livelihoods. Some of these adaptations are recognized as essential coping mechanisms for communities facing rapid climate-induced changes in their region. Alterations in climatic patterns are leading to the depletion of livelihood resources, shifts in agricultural and livestock conditions, and the proliferation of invasive species (Rautela & Karki, 2015).

Similarly, fishing and pastoralism, integral to the livelihoods of STs residing in coastal and pastoral regions, respectively, are affected by climate change-induced alterations in marine ecosystems and grazing lands. Depletion of fish stocks, habitat degradation, and water scarcity pose challenges to fishing communities, while shifts in rainfall patterns and vegetation cover impact pastoralist communities' access to grazing lands and water sources. In summary, the disruption of traditional livelihoods among ST communities due to climate change threatens their socio-economic well-being, cultural heritage, and food security. Addressing these challenges requires comprehensive strategies that integrate traditional knowledge with modern adaptation measures, promote sustainable resource management practices, and prioritize the resilience and empowerment of ST communities in the face of ongoing environmental changes.

C. Loss of Access to Resources

Climate change-induced resource scarcity, particularly concerning water and food, poses significant challenges for Scheduled Tribes (STs) in India, exacerbating their vulnerability and threatening their livelihoods and well-being. Water scarcity, intensified by changing precipitation patterns and rising temperatures, has profound implications for ST communities, many of whom rely on local water sources for drinking, irrigation, and domestic purposes. As these water sources dry up or become contaminated due to pollution and salinization, STs face difficulties accessing clean and safe

water, leading to heightened risks of waterborne diseases and inadequate hydration. In light of the evolving policy framework for addressing climate change through adaptation and mitigation strategies, forest-based livelihood opportunities become particularly important. The focus may center on integrating forest regeneration and conservation efforts with appropriate incentives to ensure the sustainable management and utilization of forest resources in the area. India's proposed concept of "compensated conservation" holds promise in this regard, offering a potentially valuable mechanism for achieving these objectives (Shah & O.G., 2009). Moreover, the decline in agricultural productivity resulting from climate change further exacerbates food insecurity among ST communities. Erratic rainfall patterns, prolonged droughts, and extreme weather events disrupt crop yields, leading to shortages in food supply and reduced dietary diversity. Many ST households, already grappling with poverty and marginalization, are forced to cope with inadequate access to nutritious food, exacerbating malnutrition and health disparities within these communities.

Consequently, the loss of access to essential resources due to climate change drives ST communities to migrate in search of alternative means of survival. Forced to abandon their ancestral lands and traditional livelihoods, many STs face the harsh reality of displacement and destitution, as they seek refuge in urban areas or other regions with better access to resources. However, migration often exacerbates social, economic, and cultural challenges for ST communities, perpetuating cycles of poverty and marginalization. Addressing the loss of access to resources among STs requires comprehensive strategies that prioritize sustainable resource management, equitable distribution of water and food resources, and adaptation measures tailored to the unique needs and vulnerabilities of ST communities. This includes investing in water conservation and management initiatives, promoting climate-resilient agriculture and livelihood diversification, and ensuring the meaningful participation of STs in decision-making processes related to natural resource management and climate change adaptation. By addressing the root causes of resource scarcity and fostering resilience within ST communities, we can mitigate the adverse impacts of climate change and promote sustainable development for all.

D. Increased Frequency of Natural Disasters

The escalating frequency and severity of natural disasters, exacerbated by climate change, pose significant threats to the safety, livelihoods, and well-being of Scheduled Tribes (STs) in India. Cyclones, floods, landslides, and forest fires, once rare occurrences, have become increasingly common and devastating in recent years, wreaking havoc on ST communities residing in vulnerable regions. Cyclones, characterized by strong winds and heavy rainfall, often result in extensive damage to homes, infrastructure, and agricultural lands in coastal areas inhabited by STs. Floods, exacerbated by rising sea levels and erratic rainfall patterns, inundate low-lying areas, destroying crops, contaminating water sources,

and triggering outbreaks of waterborne diseases. Landslides, triggered by heavy rainfall and deforestation, pose grave risks to mountainous regions inhabited by STs, burying homes and blocking access to essential services. Forest fires, fueled by prolonged droughts and extreme temperatures, ravage forested areas inhabited by ST communities, destroying valuable ecosystems, wildlife habitats, and sources of livelihood. The loss of forests not only diminishes the availability of forest resources but also exacerbates soil erosion, water scarcity, and air pollution, further compromising the resilience of ST communities reliant on forest-based livelihoods.

In the aftermath of natural disasters, ST communities often find themselves displaced, as their homes and lands are rendered uninhabitable. Forced to flee to safer areas, many STs face challenges in accessing adequate shelter, food, water, and healthcare, exacerbating their vulnerability and marginalization. The climate of our planet is undergoing ongoing changes, and these changes are expected to persist in the years and centuries ahead. Many regions are already experiencing noticeable shifts in average temperature and precipitation patterns as a result of climate change, with reliable forecasts aiding in better planning and decision-making processes for the future (Van Aalst, 2006). Moreover, the disruption of social networks, loss of assets, and psychological trauma resulting from natural disasters further compound the challenges faced by ST communities, hindering their recovery and resilience-building efforts. Addressing the increased frequency of natural disasters among STs requires comprehensive disaster risk reduction and management strategies that integrate climate change adaptation measures, early warning systems, and community-based resilience-building initiatives. By empowering ST communities to prepare for, respond to, and recover from natural disasters, we can mitigate the adverse impacts of climate change and safeguard the lives and livelihoods of vulnerable populations.

E. Health Impact

The health impacts of climate change pose significant challenges for Scheduled Tribes (STs) in India, exacerbating existing health disparities and vulnerabilities within these marginalized communities. Heatwaves, driven by rising temperatures, pose severe risks to the health and well-being of STs, particularly those residing in hot and arid regions. Prolonged exposure to extreme heat can lead to heatstroke, dehydration, and heat-related illnesses, placing individuals, especially the elderly and young children, at heightened risk. Furthermore, climate change contributes to the proliferation of vector-borne diseases such as malaria, dengue fever, and chikungunya, which disproportionately affect ST communities due to their limited access to healthcare facilities and inadequate vector control measures. Changes in temperature and rainfall patterns create conducive environments for disease-carrying mosquitoes and other vectors to thrive, leading to outbreaks of these infectious diseases in ST settlements. The effects of climate change on health outcomes are assessed through various factors, including exposure to

extreme temperatures, air pollution, allergens, food safety hazards, disruptions to healthcare services, emerging infectious diseases, and instances of flooding (Paavola, 2017).

Moreover, waterborne illnesses, exacerbated by climate change-induced floods, contamination of water sources, and inadequate sanitation infrastructure, pose significant health risks for ST communities. Limited access to clean drinking water and proper sanitation facilities increases the likelihood of waterborne diseases such as diarrhea, cholera, and typhoid fever, leading to high morbidity and mortality rates among ST populations, particularly children and the elderly. The disproportionate burden of climate change-related health impacts on ST communities underscores the urgent need for targeted interventions to strengthen healthcare systems, improve access to healthcare services, and enhance public health infrastructure in tribal areas. This includes investing in climate-resilient healthcare facilities, implementing disease surveillance and control programs, and promoting community-based health education and awareness initiatives tailored to the specific needs and vulnerabilities of ST populations. By addressing the health impacts of climate change, we can mitigate suffering, reduce mortality rates, and improve the overall well-being of ST communities in India.

F. Loss of Traditional Knowledge

The loss of traditional knowledge poses a profound challenge for Scheduled Tribes (STs) in India, as indigenous knowledge systems play a crucial role in their adaptation to local environmental conditions and sustainable resource management practices. Traditional knowledge, accumulated over generations through direct experience and observation of nature, encompasses a wealth of insights into weather patterns, plant and animal behavior, and natural resource management techniques that are finely attuned to local ecosystems. However, climate change-induced migration disrupts the transmission and preservation of traditional knowledge within ST communities. As STs are forced to relocate from their ancestral lands due to environmental degradation and climate-related hazards, they often lose direct contact with the ecosystems and natural phenomena that form the basis of their traditional knowledge systems. Displacement severs the intergenerational transfer of knowledge, as younger generations become disconnected from their cultural heritage and traditional ways of life.

Furthermore, migration to unfamiliar environments may necessitate adaptation to new climatic conditions and ecosystems, rendering traditional knowledge less relevant or applicable. As ST communities grapple with the challenges of resettlement and integration into new landscapes, they may prioritize immediate survival over the preservation of cultural practices and knowledge systems, further accelerating the erosion of traditional knowledge (Pearson et al., 2021). The loss of traditional knowledge not only undermines the resilience of ST communities in the face of climate change but also threatens the preservation of cultural diversity and ecological wisdom. Efforts to address this challenge must

prioritize the documentation, revitalization, and transmission of traditional knowledge within ST communities, ensuring its incorporation into climate change adaptation strategies and resource management initiatives. By recognizing the value of indigenous knowledge and empowering STs to reclaim and revitalize their cultural heritage, we can foster resilience, sustainability, and cultural continuity in the face of environmental change.

G. Forced Relocation

Forced relocation of Scheduled Tribes (STs) due to government-led initiatives represents a grave violation of their rights and poses significant challenges to their well-being and socio-economic stability. Such relocations are often driven by infrastructure development projects, conservation efforts, or industrial activities, which prioritize national development goals over the rights and interests of indigenous communities. These forced displacements result in the loss of ancestral lands, which hold profound cultural and spiritual significance for STs, as well as the disruption of traditional livelihoods and social structures (Sial & Padhi, 2020). ST communities, whose identities and ways of life are deeply intertwined with their land, face profound psychological and emotional trauma as they are uprooted from their homes and customary territories. Moreover, the loss of access to natural resources, including forests, rivers, and grazing lands, deprives STs of their primary means of subsistence and exacerbates poverty and food insecurity among displaced populations.

Furthermore, forced relocation often leads to the marginalization and exclusion of ST communities in their new surroundings, as they struggle to integrate into unfamiliar environments and access basic services such as healthcare, education, and employment opportunities. Discrimination, cultural alienation, and loss of social networks further compound the challenges faced by displaced STs, perpetuating cycles of poverty and vulnerability. Efforts to address forced relocation must prioritize the recognition of STs' land rights, cultural heritage, and right to self-determination. Governments and development agencies must engage in meaningful consultation and consent processes with affected communities, ensuring their participation in decision-making processes and the formulation of development plans that respect their rights and priorities (Ramachandraiah & Venkateswarlu, 2014). Moreover, adequate compensation, resettlement assistance, and livelihood support must be provided to displaced STs to enable them to rebuild their lives and maintain their cultural identity and resilience in the face of forced displacement. Only through a rights-based approach that upholds the dignity, autonomy, and well-being of ST communities can the injustices of forced relocation be addressed and meaningful solutions achieved.

H. Social and Cultural Disruption

The migration of Scheduled Tribes (STs) prompted by climate change engenders profound social and cultural disruptions within these communities, undermining their

cohesion, identity, and resilience. As STs are forced to leave their ancestral lands and traditional homelands in search of alternative livelihoods and safer environments, they often experience the fragmentation of families and social networks, as individuals and households are scattered across different locations. The disintegration of kinship ties and social support networks erodes the traditional systems of mutual aid and reciprocity that have long sustained ST communities, leaving individuals and families vulnerable to social isolation, economic insecurity, and psychological distress. Moreover, the loss of elders and community leaders, who serve as custodians of traditional knowledge, cultural practices, and oral histories, further weakens the intergenerational transmission of cultural heritage and undermines the resilience of ST communities.

Furthermore, migration disrupts the continuity of cultural practices, rituals, and languages within ST communities, as individuals and families grapple with the challenges of adapting to new environments and integrating into mainstream society. Traditional customs and ceremonies, once central to the social fabric of ST life, may be abandoned or diluted as communities prioritize immediate survival over cultural preservation (Baruah, 2003). Likewise, the erosion of indigenous languages and dialects, compounded by the pressures of globalization and urbanization, threatens the linguistic diversity and cultural identity of STs, further exacerbating feelings of marginalization and alienation. Addressing the social and cultural disruptions caused by climate-induced migration requires holistic approaches that recognize the intrinsic value of indigenous knowledge, cultural heritage, and social cohesion within ST communities. Efforts to support STs must prioritize the preservation and revitalization of traditional practices, languages, and social institutions, while fostering inclusive and participatory approaches that empower communities to adapt and thrive in the face of environmental change. By centering the voices and experiences of STs in decision-making processes and development initiatives, we can ensure the preservation of their rich cultural heritage and promote the resilience and well-being of indigenous communities for generations to come.

I. Limited Access to Services and Opportunities

Scheduled Tribes (STs) migrants grappling with climate-induced displacement frequently encounter formidable barriers hindering their integration into mainstream society. Discrimination, rooted in entrenched social hierarchies and stereotypes, compounds the challenges faced by ST migrants, exacerbating their marginalization and exclusion from essential services and opportunities. Access to education, a fundamental pathway for socioeconomic mobility and empowerment, remains elusive for many ST migrants, as they confront systemic barriers such as language barriers, cultural insensitivity, and lack of adequate infrastructure in destination areas. Limited access to quality education perpetuates cycles of poverty and illiteracy among ST communities, impeding

their ability to secure gainful employment and participate fully in the socio-economic development of society (Sindhi, 2012). Similarly, healthcare services often remain inaccessible or inadequate for ST migrants, who confront systemic biases, cultural barriers, and geographical constraints when seeking medical care. Lack of culturally sensitive healthcare facilities, trained personnel, and affordable treatment options exacerbate health disparities and contribute to higher morbidity and mortality rates among ST populations, particularly in rural and remote areas.

Moreover, ST migrants frequently encounter discrimination and exclusion in the labor market, where they face limited employment opportunities, low wages, and exploitative working conditions. Prejudice and stereotypes perpetuate the cycle of poverty and marginalization, depriving ST migrants of the economic opportunities needed to uplift themselves and their families out of poverty. Addressing the limited access to services and opportunities faced by ST migrants requires comprehensive strategies that prioritize equity, inclusion, and social justice (Vijaya Lakshmi & Milcah Paul, 2019). Efforts to dismantle systemic barriers must be accompanied by targeted interventions aimed at promoting access to education, healthcare, and employment opportunities for ST migrants, while fostering inclusive and culturally responsive service delivery models that recognize and respect the unique needs and aspirations of ST communities. By empowering ST migrants to fully participate in society and realize their potential, we can build a more equitable and inclusive future for all.

J. Policy Gaps and Inadequate Support

Policy gaps and inadequate support mechanisms exacerbate the challenges faced by Scheduled Tribes (STs) communities grappling with climate change-induced migration. Existing policies and programs often fail to recognize the unique needs, vulnerabilities, and rights of ST populations, leaving them disproportionately marginalized and underserved in the face of environmental change. One of the primary shortcomings of current policies is the lack of comprehensive strategies for sustainable livelihoods and economic opportunities tailored to the specific contexts of indigenous populations. Many ST communities rely on traditional livelihoods linked to natural resources, which are increasingly threatened by climate change impacts. However, existing development interventions often prioritize mainstream economic growth models over the preservation of traditional knowledge and sustainable resource management practices, leading to further marginalization and displacement of ST communities. Additionally, there is a dearth of social protection mechanisms and safety nets to support ST migrants during periods of transition and crisis (Mohanti et al., 2009). Displacement due to climate change often results in loss of land, livelihoods, and social networks, leaving ST communities vulnerable to poverty, hunger, and exploitation. However, there are few targeted interventions to provide adequate assistance, resettlement support, and psychosocial

services to affected ST populations, exacerbating their vulnerability and perpetuating cycles of poverty and marginalization.

Furthermore, there is a critical need for enhanced disaster risk reduction strategies that prioritize the resilience and adaptive capacities of ST communities. Climate change-induced natural disasters, such as floods, cyclones, and wildfires, disproportionately affect ST populations due to their geographical location and limited access to early warning systems, evacuation routes, and emergency shelters. However, existing disaster management policies often overlook the specific vulnerabilities and cultural contexts of ST communities, resulting in inadequate preparedness, response, and recovery efforts (Soman et al., 2023). Addressing policy gaps and enhancing support mechanisms for ST communities affected by climate change-induced migration requires a paradigm shift towards more inclusive, rights-based approaches that prioritize indigenous knowledge, community participation, and cultural sensitivity. Policymakers must engage in meaningful consultation and collaboration with ST Representatives to co-design and implement targeted interventions that address their unique needs and aspirations, while promoting sustainable development, social justice, and human rights for all. By centering the voices and experiences of ST communities in policy formulation and implementation processes, we can build more resilient, equitable, and inclusive societies that leave no one behind in the face of climate change.

These points highlight the multifaceted challenges faced by Scheduled Tribes in India as they grapple with the impacts of climate change-induced migration. Addressing these challenges requires holistic approaches that prioritize the rights, resilience, and well-being of indigenous communities in the face of environmental change.

VI. CHALLENGES FACED BY MIGRANT TRIBES IN DESTINATION AREAS

Migration, whether temporary or permanent, presents numerous challenges for Scheduled Tribes. Discrimination and marginalization in urban areas often limit their access to essential services such as healthcare, education, and employment opportunities. Cultural alienation and language barriers further exacerbate their integration into mainstream society, perpetuating social exclusion and inequality (Susanto et al., 2021). Moreover, the loss of traditional knowledge and practices associated with land-based livelihoods undermines the resilience of tribal communities, making them more susceptible to the adverse effects of climate change. These challenges highlight the urgent need for comprehensive and targeted interventions to address the unique needs and vulnerabilities of migrant tribes in destination areas.

A. *Discrimination and Marginalization*

One of the most pervasive challenges faced by migrant tribes in destination areas is discrimination and marginalization. Despite legal protections against discrimination, many tribal migrants encounter prejudice and bias in various aspects of their lives, including housing, employment, education, and access to public services. Discriminatory practices, fueled by stereotypes and misconceptions about tribal communities, often result in unequal treatment and opportunities for tribal migrants, hindering their social and economic integration into urban society (Bijoy, 2001). In addition, migrant tribes may face barriers to accessing essential services such as healthcare and education due to discrimination and lack of culturally sensitive services. Discriminatory attitudes among healthcare providers and educators can deter tribal migrants from seeking medical treatment or enrolling in schools, exacerbating health and educational disparities within these communities. Moreover, limited availability of healthcare facilities and schools in urban areas further compounds the challenges faced by migrant tribes in accessing these vital services.

B. *Cultural Alienation and Language Barriers*

Cultural alienation and language barriers pose significant obstacles to the integration of migrant tribes into mainstream society. Tribal migrants often face difficulties in navigating unfamiliar urban environments, adapting to new social norms and customs, and preserving their cultural identity and traditions. The loss of community support networks and kinship ties, which are integral to tribal life, can further exacerbate feelings of isolation and disconnection among migrant tribes in destination areas. Language barriers also present challenges for tribal migrants, particularly those who speak indigenous languages or dialects (Kujur & Minz, 2021). Limited proficiency in the dominant language of the urban area can hinder communication with service providers, employers, and other members of society, limiting opportunities for social interaction, economic advancement, and civic participation. Moreover, the lack of culturally sensitive language support services further marginalizes tribal migrants and reinforces their exclusion from mainstream society.

C. *Loss of Traditional Practices*

The loss of traditional knowledge and practices associated with land-based livelihoods poses a significant threat to the resilience of tribal communities in destination areas. Many tribal migrants rely on traditional livelihoods such as agriculture, forestry, fishing, and pastoralism for their survival and cultural identity. However, the transition to urban life often disrupts these traditional livelihoods, leading to the erosion of indigenous knowledge and practices related to land management, resource conservation, and environmental stewardship (Satapathy, n.d). The loss of traditional knowledge not only undermines the cultural heritage of tribal communities but also reduces their ability to adapt to environmental changes and cope with the impacts of climate

change. Indigenous knowledge systems, passed down through generations, offer valuable insights into weather patterns, natural resource management, and sustainable agriculture practices that are finely attuned to local ecosystems. However, the loss of these traditional practices weakens the resilience of tribal communities, making them more susceptible to the adverse effects of climate change, such as food insecurity, water scarcity, and natural disasters.

At last it can be said, migrant tribes in destination areas face a myriad of challenges, including discrimination and marginalization, cultural alienation and language barriers, and the loss of traditional knowledge and practices. These challenges underscore the urgent need for comprehensive and targeted interventions to address the unique needs and vulnerabilities of migrant tribes in urban settings. Efforts to promote social inclusion, cultural sensitivity, and economic empowerment are essential for ensuring the well-being and resilience of tribal communities in destination areas. By addressing these challenges and fostering inclusive and equitable urban environments, we can create opportunities for migrant tribes to thrive and contribute to the diversity and vibrancy of urban society (Aich et al., 2022).

VII. POLICY INTERVENTIONS AND WAY FORWARD

Addressing the complex interplay between climate change, migration, and the well-being of Scheduled Tribes requires a multi-dimensional approach. Government policies and programs must prioritize the protection of indigenous rights, ensuring their participation in decision-making processes and the formulation of climate adaptation strategies (Ellis & Allison, 2004). Strengthening social safety nets and livelihood diversification initiatives can enhance the resilience of tribal communities, enabling them to cope with environmental shocks and disruptions. Investing in education and skill development programs tailored to the needs of tribal youth can empower them to secure sustainable livelihoods and contribute to their communities' socio-economic development. These policy interventions are essential for charting a way forward towards a more inclusive and sustainable future for Scheduled Tribes in India.

A. *Protecting Indigenous Rights and Participation in Decision-Making*

One of the fundamental pillars of addressing the challenges faced by Scheduled Tribes (STs) in the context of climate change-induced migration is the protection of indigenous rights and the promotion of their active participation in decision-making processes. Indigenous communities have unique knowledge, perspectives, and connections to their environments, making their involvement crucial in developing effective climate adaptation strategies that are culturally appropriate and socially inclusive. Governments must recognize and respect the land rights of indigenous communities, ensuring secure land tenure and ownership rights through legal reforms and participatory land

management processes (*Consent, Participation of Indigenous Peoples in Decisions Affecting Them Vital to Advancing Their Rights, Special Rapporteur Tells Third Committee | Meetings Coverage and Press Releases*, n.d.). This includes the implementation of mechanisms such as Free, Prior, and Informed Consent (FPIC) to ensure that STs have a meaningful say in decisions that affect their lands, resources, and livelihoods. Moreover, governments should establish platforms for meaningful consultation and collaboration with indigenous representatives, fostering partnerships based on mutual respect, trust, and shared decision-making.

B. Strengthening Social Safety Nets and Livelihood Diversification

Enhancing the resilience of tribal communities to climate change impacts requires strengthening social safety nets and promoting livelihood diversification initiatives. Social protection programs, such as cash transfers, food assistance, and insurance schemes, can provide a crucial safety net for ST communities during periods of environmental shocks and economic hardship. These programs should be designed to be inclusive, gender-sensitive, and responsive to the specific needs and vulnerabilities of ST populations (Andrews et al., 2020). Furthermore, promoting livelihood diversification strategies can help reduce the reliance of ST communities on climate-sensitive sectors such as agriculture and forestry, diversifying income sources and enhancing adaptive capacity. This includes investing in alternative livelihood opportunities such as eco-tourism, handicrafts, small-scale enterprises, and renewable energy projects, which align with indigenous values and promote sustainable development. Moreover, supporting community-based natural resource management initiatives can empower ST communities to sustainably manage their lands and resources, promoting environmental conservation and resilience.

C. Investing in Education and Skill Development

Empowering tribal youth through education and skill development is essential for unlocking their potential as agents of change and contributors to their communities' socio-economic development. Investment in education infrastructure, teacher training, and scholarship programs can improve access to quality education for ST children, reducing disparities in educational outcomes and fostering social mobility. Moreover, promoting culturally relevant and language-sensitive curricula can help preserve indigenous knowledge and promote cultural identity among ST youth (Sanghi, 2015). In addition to formal education, investing in vocational training and skill development programs tailored to the needs of ST communities can equip youth with the skills and knowledge needed to pursue sustainable livelihoods and contribute to local economies. This includes training in agriculture, agro forestry, renewable energy technologies, eco-tourism, and traditional crafts, among others. Furthermore, supporting entrepreneurship initiatives and access to microfinance services can empower ST youth to start their

own businesses and generate income opportunities within their communities (Odoul, 2010).

VIII. CONCLUSION

The plight of Scheduled Tribes displaced by climate change underscores the urgent need for concerted action to mitigate its impacts and safeguard the rights and livelihoods of indigenous communities. As India strives to achieve its climate goals and build a more sustainable future, it must prioritize the inclusion and empowerment of tribal populations in its adaptation and mitigation efforts. Only through collaborative partnerships, informed by indigenous knowledge and experiences, can we address the root causes of tribal migration and ensure a more equitable and resilient society for all (Choksi et al., 2021). Climate change poses existential threats to vulnerable communities worldwide, but its impact is particularly severe for indigenous peoples like the Scheduled Tribes in India. These communities have historically been stewards of the environment, relying on traditional knowledge and sustainable practices to thrive in harmony with nature. However, rapid environmental degradation and climate-induced disasters have disrupted their way of life, forcing many to leave their ancestral lands in search of safer and more sustainable livelihoods.

The challenges faced by displaced tribal communities are multifaceted and complex. From loss of land and cultural heritage to discrimination and marginalization in urban areas, tribal migrants grapple with a myriad of obstacles as they navigate the uncertain terrain of climate-induced migration. Discriminatory practices, fueled by stereotypes and misconceptions about tribal communities, often limit their access to essential services such as healthcare, education, and employment opportunities. Cultural alienation and language barriers further exacerbate their integration into mainstream society, perpetuating social exclusion and inequality. Moreover, the loss of traditional knowledge and practices associated with land-based livelihoods undermines the resilience of tribal communities, making them more susceptible to the adverse effects of climate change. Indigenous knowledge systems, passed down through generations, offer valuable insights into weather patterns, natural resource management, and sustainable agriculture practices that are finely attuned to local ecosystems. However, the erosion of these traditional practices weakens the resilience of tribal communities, leaving them vulnerable to food insecurity, water scarcity, and natural disasters (Santha et al., 2015).

In the face of these challenges, there is an urgent need for comprehensive and targeted interventions to address the unique needs and vulnerabilities of tribal communities affected by climate change-induced migration. Governments, civil society organizations, and the private sector must work together to develop holistic solutions that prioritize the protection of indigenous rights, strengthen social safety nets,

promote livelihood diversification, and invest in education and skill development programs tailored to the needs of tribal populations. Protecting indigenous rights is essential for ensuring the dignity, autonomy, and self-determination of tribal communities (Algur et al., 2021). This includes recognizing and respecting their land tenure rights, promoting their participation in decision-making processes, and upholding their right to Free, Prior, and Informed Consent (FPIC) in development projects affecting their lands and resources. Strengthening social safety nets and promoting livelihood diversification initiatives can enhance the resilience of tribal communities, enabling them to cope with environmental shocks and disruptions. Investment in education and skill development programs tailored to the needs of tribal youth is crucial for unlocking their potential as agents of change and contributors to their communities' socio-economic development.

Furthermore, efforts to address the challenges faced by tribal communities must be informed by indigenous knowledge and experiences. Indigenous peoples possess a wealth of knowledge and insights into their environments, which can inform more effective and sustainable approaches to climate adaptation and mitigation. By recognizing the value of indigenous knowledge and fostering collaborative partnerships between governments, civil society, and indigenous stakeholders, we can build more resilient, equitable, and inclusive societies that leave no one behind in the face of climate change (Michael, 2015).

At last, it can be said that the plight of Scheduled Tribes displaced by climate change is a stark reminder of the urgent need for transformative action to address the root causes of environmental degradation, promote social justice, and protect the rights and livelihoods of indigenous communities. By prioritizing the inclusion and empowerment of tribal populations in climate action initiatives, we can forge a path towards a more sustainable and equitable future for all (McMichael Celia et al., 2012).

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