



SOCIO-ECONOMIC IMPACT OF FLOODS ON RURAL COMMUNITIES: A CASE STUDY OF RETHARE KHURD VILLAGE IN SATARA DISTRICT, MAHARASHTRA

Mr. S. D. Kamble

*Assistant Professor, Department of Geography,
S. B. S. College, Karad*

ABSTRACT:

Floods are among the most frequent and disturbing natural disasters, causing significant socio-economic and environmental impacts globally. This study focuses on the socio-economic impact of the August 2019 flood on Rethare Khurd village in the Satara district of Maharashtra, located in the flood-prone Krishna River basin. The research assesses the extent of damage to houses, agricultural lands, and livelihoods while exploring the challenges faced by the affected population.

The study utilized a mixed-method approach, combining primary data collected through household surveys and interviews with secondary data from government reports and previous studies. Key findings reveal substantial damage to housing infrastructure, loss of crops and livestock, and increased health issues among the population. Approximately 77% of houses were damaged, and agricultural losses were profound, with sugarcane and other crops severely affected. Health problems such as epidemics and poor sanitation were widespread post-flood.

Institutional responses included limited government assistance, support from NGOs, and community-driven efforts, but gaps in disaster preparedness and management were evident. The study concludes with recommendations for improving flood resilience through better early warning systems, community engagement, and sustainable development practices. This research highlights the need for integrated flood management strategies to mitigate the socio-economic vulnerabilities of rural communities in flood-prone regions.

Keywords: *Socio-Economic Impact, Flood Management, Krishna River Basin*

INTRODUCTION:

Floods are among the most disturbing natural disasters, affecting millions of lives globally every year. While they are often natural phenomena, resulting from excessive rainfall, river overflow, or storm surges, human-induced factors such as deforestation, unplanned urbanization, and poor water management systems exacerbate their frequency and impact. In rural regions, floods disrupt the socio-economic structure, causing extensive damage to livelihoods, homes, and infrastructure. Their consequences are long-lasting, particularly for communities that depend heavily on agriculture and have limited access to financial and institutional support for recovery.

The Krishna River basin, located in Maharashtra, is no stranger to the consequences of recurrent flooding. Rethare Khurd, a small village in the Satara district, is one of the many communities in this region vulnerable to floods. Situated near the Krishna River and characterized by fertile agricultural land, the village is frequently subjected to flood events during the monsoon season. The August 2019 flood was particularly catastrophic, submerging homes, destroying crops, displacing residents, and significantly affecting the overall socio-economic fabric of the community.

Floods in rural areas like Rethare Khurd have unique implications. They not only erode agricultural productivity, which is the mainstay of the local economy, but also lead to health crises due to poor sanitation and waterborne diseases. Additionally, such disasters expose gaps in infrastructure, governance, and disaster preparedness. The August 2019 flood revealed several challenges such as inadequate early warning systems, insufficient relief efforts, and the community's lack of resilience to natural disasters.

This research aims to provide a comprehensive analysis of the socio-economic impact of floods on Rethare Khurd. The study seeks to understand the extent of damage caused by the flood to housing, agriculture, and public health, and to evaluate the recovery and coping mechanisms employed by the affected population. It also examines the role of government agencies, non-governmental organizations (NGOs), and local bodies in providing assistance and mitigating the flood's effects. Furthermore, it underscores the importance of community-based disaster management strategies and highlights the need for sustainable measures to reduce the vulnerability of rural communities to future floods.

Through this study, we aim to contribute to the broader discourse on disaster resilience and management, particularly in flood-prone regions. The findings will serve as a valuable resource for policymakers, planners, and

community leaders to design effective flood mitigation and adaptation strategies. Addressing the challenges of floods is crucial not only for the recovery of affected communities but also for achieving long-term socio-economic stability and sustainable development in rural India.

STUDY REGION:

Rethare Khurd village is located in the Karad tehsil of the Satara district in Maharashtra, India. Positioned within the Krishna River basin, the village lies at approximately 17°10'29" North latitude and 74°12'10" East longitude, at an elevation of 592 meters above sea level. Spanning an area of 5.9 square kilometers, the village is bordered by Mauje Atke to the north, Wathar to the west, the Krishna River to the south, and Rethare Bu to the east. The region falls under the Western Maharashtra administrative division and is characterized by a subtropical climate with moderate to heavy rainfall during the monsoon season, which significantly influences its agricultural activities. The village's rectangular geographical layout and fertile soil, enriched by silt deposits from the Krishna River, make it an agricultural hotspot, albeit one prone to the risks associated with flooding.

According to the 2011 Census, Rethare Khurd has a population of 3,739, with a literacy rate of 79.9%. Agriculture is the primary occupation of the residents, supplemented by animal husbandry and small-scale trade. The village is well-connected by road, with the Pune-Bangalore National Highway and a network of local roads enhancing accessibility. Despite its proximity to vital transportation corridors, the village faces challenges due to its vulnerability to seasonal floods. These floods, driven by excessive rainfall and unregulated water releases from upstream dams, often disrupt the socio-economic stability of the region. The August 2019 flood highlighted these vulnerabilities, with extensive damage to agricultural land, homes, and infrastructure, making Rethare Khurd a critical case for studying the socio-economic impacts of natural disasters in rural India.

SIGNIFICANCE OF THE STUDY:

This study is significant as it provides a detailed analysis of the socio-economic impacts of floods on rural communities, using Rethare Khurd village as a case study. Located in the flood-prone Krishna River basin, the village represents a microcosm of the challenges faced by many rural areas in India during natural disasters. By examining the damage caused by the August 2019

flood to housing, agriculture, and public health, the research highlights the vulnerabilities of such communities and the long-term repercussions of inadequate disaster preparedness. Furthermore, the study offers insights into the role of government agencies, NGOs, and local governance in post-disaster recovery. The findings aim to contribute to the development of effective flood mitigation strategies, improve community resilience, and inform policymakers about sustainable practices to reduce flood risks in similar rural settings. This research holds importance not only for Rethare Khurd but also for other regions vulnerable to recurrent flooding.

OBJECTIVES:

1. To assess the geographical and socio-economic characteristics of Rethare Khurd village and identify the factors contributing to its vulnerability to floods.
2. To evaluate the impact of the August 2019 flood on housing, agriculture, public health, and livelihoods in the study area.
3. To recommend sustainable flood mitigation and disaster management strategies to enhance the resilience of rural communities like Rethare Khurd.

DATA BASE AND METHODOLOGY:

This study relies on both primary and secondary data to analyze the socio-economic impact of floods on Rethare Khurd village.

Primary Data:

Primary data was collected through fieldwork, including a household survey using a structured questionnaire to assess the damage caused by the August 2019 flood, focusing on housing, livestock, crops, health, and migration patterns. Semi-structured interviews were conducted with affected residents to understand their coping strategies and the assistance received from government and NGOs. Observational methods documented visible impacts, such as damage to infrastructure and agriculture.

Secondary Data:

Secondary data was gathered from census reports, government records, and socio-economic abstracts of Satara district. Additional academic studies, research papers, and flood management reports were reviewed to provide context. Maps and statistical data helped in understanding the region's geographical and demographic characteristics.

Methodology:

A mixed-methods approach was employed, combining quantitative data from surveys and qualitative data from interviews and observations. Statistical tools were used for data analysis, while thematic analysis was applied to the qualitative data to understand the community's experiences. This approach allowed for a comprehensive understanding of the flood's socio-economic impact and informed recommendations for future flood mitigation strategies.

SOCIO-ECONOMIC STATUS OF FLOOD-AFFECTED POPULATION:

The August 2019 flood deeply affected the socio-economic structure of Rethare Khurd village. This section provides a detailed analysis of the social and economic status of the flood-affected population.

1. Social Status:

The social structure of Rethare Khurd village reflects a harmonious coexistence of people from various castes and religions.

A) Literacy Rate: The village has a literacy rate of 79.9%, with a notable gender disparity as male literacy is 92.09%, while female literacy stands at 76.29%. A significant portion of the population falls within the working-age group (15–59 years), and agriculture is the primary occupation.

B) Caste Composition: The population includes marginalized communities (Scheduled Castes at 9.51%) who were disproportionately affected by the flood due to their economic vulnerabilities.

C) Occupation: Around 70.86% of the working population relies on agriculture, making them highly susceptible to flood-induced disruptions. Non-agricultural activities contribute 29.14%, indicating limited economic diversification.

D) Gender Gap in Literacy: While male literacy is significantly high, the lower female literacy highlights social challenges in empowering women in education and disaster preparedness.

The floods further aggravated these social disparities, particularly affecting those engaged in agricultural labor or living in kaccha houses, which are structurally weaker.

2. Economic Status:

The economic profile of the village is predominantly agricultural, with households heavily dependent on farming and livestock. However, the floods caused widespread economic distress, particularly among small-scale farmers

and low-income households. The economic status is analyzed under the following aspects:

A) Income Disparity: A significant majority (83%) of the population earns less than Rs.1 lakh annually, reflecting financial vulnerability. Only 2% of the population has an annual income exceeding Rs. 5 lakh. The flood exacerbated income disparities, pushing already low-income households into deeper economic distress.

B) Land Distribution: The majority (73%) of households own less than 1 acre of land, making them subsistence farmers highly dependent on seasonal crops. The flood's destruction of agricultural land due to waterlogging and erosion left these households with little to no livelihood options.

C) Housing Vulnerability: Kaccha houses, which constitute 40% of the total housing, were the most vulnerable during the flood. These structures suffered significant damage, while pakka houses (60%) were relatively more resistant. However, even pakka houses experienced damage to household items.

The socio-economic status of Rethare Khurd reveals the widespread devastation caused by the flood. Marginalized communities and low-income households were disproportionately affected, with significant losses in agriculture, housing, and livelihoods. These findings emphasize the need for targeted interventions, such as financial support, community-based disaster preparedness, and sustainable agricultural practices, to build resilience against future floods.

IMPACT OF FLOOD ON THE STUDY REGION:

The August 2019 flood in Rethare Khurd village caused widespread socio-economic and environmental damage. The following points outline the major impacts observed during the study:

A) Damage to Housing: Approximately 77% of houses in the village were damaged due to their location in flood-prone areas. Kaccha houses (constructed with mud and wood) were the most affected, collapsing under the pressure of water and debris. Even pakka houses (brick and cement structures) suffered from water infiltration, causing significant damage to household items such as furniture and electrical appliances.

B) Damage to Household Items: Nearly 75% of households reported damage to essential items such as furniture, electrical appliances, and utensils. The damage was primarily caused by waterlogging and sediment

deposits, which rendered many items unusable. The loss of household items added financial strain on families, as replacing these items required significant expenditure.

C) Agricultural Losses: The village, being heavily reliant on agriculture, faced significant damage to farmland and crops. Soil erosion affected 41% of the agricultural land, while 49% of the standing crops were destroyed. Sugarcane, the primary crop, suffered the most damage, followed by rice and vegetables. The destruction of crops not only resulted in immediate financial losses but also disrupted the agricultural cycle, affecting future yields.

D) Livestock Losses: Livestock, a secondary source of income for many households, was also impacted. Chickens were the most affected, with 14% of the population lost, followed by buffaloes (6%), cows (5%), and goats (3%). The loss of livestock affected the nutritional and financial stability of households, particularly those already struggling economically.

E) Health Problems: The flood created a range of health issues due to stagnant water, unsanitary conditions, and the spread of diseases. Epidemics and unhygienic conditions were reported by 27% and 35% of the population, respectively, while 34% experienced stench and filth. The lack of immediate medical assistance and poor sanitation aggravated the health crisis in the aftermath of the flood.

F) Migration and Displacement: Many families were displaced due to the floodwaters, with 51% relocating to refugee camps for less than 5 days and 49% staying for longer durations. The camps lacked adequate facilities, further impacting the well-being of the displaced population. Temporary displacement caused significant emotional and financial strain on the affected families.

CONCLUSION:

The August 2019 flood in Rethare Khurd village brought widespread socio-economic and environmental devastation, highlighting the vulnerabilities of rural communities to natural disasters. The findings of this study underline the significant challenges faced by the village, including loss of housing, destruction of agricultural land and crops, livestock losses, health crises, and displacement. Approximately 77% of houses were damaged, 49% of agricultural crops were destroyed, and 75% of households reported damage to essential items. These losses were compounded by inadequate institutional responses and limited local governance measures.

The study also revealed the reliance of the village on agriculture and livestock, making its economy particularly susceptible to climate-related shocks. The impact on sugarcane, the primary crop, along with soil erosion and land degradation, severely disrupted livelihoods and food security. Health issues, caused by poor sanitation and stagnant water, further aggravated the difficulties faced by the community.

While NGOs provided substantial relief, with 74% of households receiving assistance, gaps in government support and disaster preparedness were evident. The lack of proactive measures by local governance, such as early warning systems and community-based disaster management plans, exacerbated the crisis. This research emphasizes the critical need for integrated and sustainable approaches to disaster management to enhance resilience and reduce vulnerabilities in flood-prone regions.

SUGGESTIONS:

To mitigate the impact of future floods and build resilience in rural communities like Rethare Khurd, the following suggestions are proposed:

1. Develop and implement community-based early warning systems to provide timely alerts before floods occur.
2. Conduct awareness programs to educate residents about flood risks and preparedness measures.
3. Encourage the construction of flood-resistant houses using durable materials and elevate structures in flood-prone areas.
4. Invest in improving drainage systems, building embankments, and maintaining road networks to reduce flood vulnerability.
5. Promote flood-tolerant crop varieties and diversify agricultural activities to reduce dependency on single crops like sugarcane.
6. Implement soil erosion control measures, such as contour farming and afforestation, to protect fertile land.
7. Ensure timely and equitable distribution of relief funds and materials to all affected households.
8. Foster partnerships with NGOs to strengthen relief and rehabilitation efforts.
9. Empower Gram Panchayats to actively participate in flood management planning and implementation. Protect and restore natural wetlands in the region to act as buffers during floods.

10. These suggestions, when implemented, can significantly reduce the impact of future floods and foster sustainable development in Rethare Khurd and similar flood-prone villages. By integrating community participation, government initiatives, and scientific approaches, the resilience of rural communities to natural disasters can be effectively enhanced.

REFERENCES:

1. Central Ground Water Board (CGWB) (2009). *Report on the Groundwater Resources of Satara District*. Government of India.
2. Chand, M., & Puri, V. K. (1983). *Regional Planning in India*. Allied Publishers, Bombay.
3. District Census Handbook of Satara (2011). Directorate of Census Operations, Maharashtra.
4. Miller, J. P. (1958). *High Mountain Streams: Effects of Geology on Channel Characteristics and Bed Material*. Memoir, New Mexico Bureau of Mines & Mineral Resources.
5. Sapkale, J. B. (2007). *Shifts in Tarali River Channel: A Tributary of Krishna in Post-Monsoon Low Flow Condition*. Transactions of the Institute of Indian Geographers, 29(1), 43–54.
6. Borrows, P., & De Bruin, D. (2006). *Flood Management and Mitigation: Lessons from Global Practices*. International Water Resources Association.
7. Mirza, M. M. Q., & Dixit, A. (2003). *Flood Problem and Management in South Asia*. Journal of Natural Hazards, 28(1), 121–143.
8. Satara District Gazetteer (1991). *Satara District Gazetteer of India*. Government of Maharashtra.
9. Ariyabandu, M. M., & Wickramasinghe, M. (2005). *Gender Dimensions in Disaster Management: Insights from South Asia*. ITDG Publishing, Sri Lanka.
10. Douben, N. (2006). *Flood Management: Policy and Practice*. International Association of Hydrological Sciences.