

Beyond Heatwaves

Warming Landscapes and Rural Climate
Vulnerability in Madhya Pradesh



A Qualitative Study by Transform Rural India
2026

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Foreword



Climate change is reshaping rural India in ways that extend beyond discrete climatic events and conventional sectoral boundaries. Its consequences are reflected in changing seasonal patterns, increasing pressure on water and natural resources, livelihood uncertainty, and the growing demands placed upon households. *Beyond Heatwaves: Warming Landscapes and Rural Climate Vulnerability in Madhya Pradesh* provides a grounded examination of these interconnected challenges through the lived experiences of rural communities.

Drawing upon qualitative research undertaken in Rajpur Block of Barwani District and Bijadandi Block of Mandla District, the report employs the concept of “Systemic Heat” to examine how persistent warming interacts with local ecological and social conditions. It also draws an important distinction between short-term coping and sustained resilience. Rural households may continue to adapt their routines, but often at the cost of health, rest, income and unpaid labour, with women carrying a disproportionate share of these burdens.

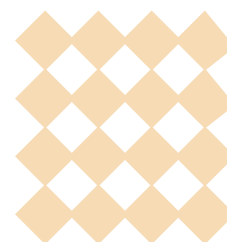
The report is especially relevant for policymakers and public institutions. By translating community experiences into policy considerations, it can assist the Government of Madhya Pradesh in developing more integrated and locally responsive approaches to rural climate resilience. Its recommendations indicate how water security, ecological restoration, livelihoods, housing, infrastructure and local governance can be addressed through coordinated planning. They also provide useful directions for making Gram Panchayat plans, government programmes and public investments more responsive to emerging climate risks. The study would not have been possible without the women and men of Rajpur and Bijadandi, who generously shared their knowledge, experiences and perspectives.

The contributors to this report include Mayuresh Bhadsavle, Climate Action Specialist, Madhya Pradesh, Transform Rural India; interns from the Kalinga Institute of Industrial Technology (KIIT), Bhubaneswar — Prakash Chandra Bagh, Dosapati Saikeerthana, Om Prakash Sahoo, Sakshi, Prity Koor and Thokala Vasantha—for their contributions to field data collection and desk research; and colleagues from TRI Community Action Lab—Ronith Banerjee, Shivani Tomer, Rahul Pandit, Suraj Tayade, Manindr Mishra, Rakesh Singh Jadon and Vikas Yadav—along with other colleagues at Transform Rural India who supported the study at various stages.

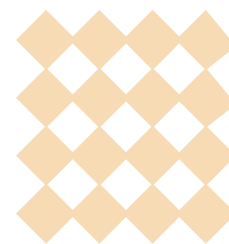
Transform Rural India hopes that report will contribute to more integrated, gender-responsive and locally grounded climate policies—enabling rural communities not merely to cope with a warming climate, but to build lasting resilience and prosperity.

Transform Rural India
Bhopal, Madhya Pradesh

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Executive Summary



Extreme heat is increasingly being recognised as one of the defining climate risks of our time. While recent research has substantially advanced understanding of heat exposure, vulnerability and adaptation, much of this evidence has emerged from urban contexts or has examined rural heat through sector-specific lenses such as public health, agriculture, labour productivity and water. In the Indian context, the rural experience of heat remains comparatively underexplored as an interconnected environmental and social phenomenon. Much of the existing evidence continues to examine heat through individual sectors or policy domains, with comparatively little attention to how rural communities themselves perceive and make sense of rising temperatures as they unfold across interconnected landscapes, livelihoods, and everyday life. This report begins from that question.

The study is based on qualitative research undertaken across two contrasting rural landscapes of Madhya Pradesh—Rajpur Block in Barwani District and Bijadandi Block in Mandla District. Drawing upon in-depth interviews, focus group discussions, key informant interviews, and field observations, the study allows community narratives to reveal how environmental change is perceived, interpreted, and negotiated within everyday rural life, rather than beginning with

the predefined sectoral categories. Rather than challenging existing evidence, the report broadens the conversation by foregrounding lived experiences that are often less visible within conventional assessments of climate risk.

Across both landscapes, respondents rarely described heat as an isolated climatic event. Instead, rising temperatures were consistently understood alongside changing rainfall, declining water availability, changing forest conditions, agricultural uncertainty, shifting livelihood practices and disruptions to seasonal rhythms. Conversations about one environmental change frequently led to another, suggesting that rural communities experience heat not as a series of independent impacts but as interconnected ecological and social processes.

Building on these observations, the report uses the idea of Systemic Heat to describe how persistent warming reshapes the way existing ecological and hydrological conditions are experienced across rural landscapes. Rather than viewing heat solely through individual sectors or extreme events, this perspective explains how persistent warming intensifies the consequences of existing landscape characteristics, causing multiple environmental and social changes to become intertwined within everyday rural life

One of the study's principal findings is that viewing persistent warming and its consequences through the lens of Systemic Heat helps explain how cascading vulnerabilities emerge across health, gender and livelihoods.

One of the study's principal findings is that viewing persistent warming and its consequences through the lens of Systemic Heat helps explain how cascading vulnerabilities emerge across health, gender and livelihoods. Environmental stresses rarely remain confined to one domain. Changes in water availability influence agriculture; agricultural uncertainty reshapes livelihoods; changing livelihoods alter household responsibilities, health and well-being. As these interactions recur across seasons and years, they reinforce one another, gradually creating a **downward spiral of vulnerability**, where repeated environmental stresses progressively erode households' capacity to anticipate, absorb and recover from future climatic risks.

The study also identifies emerging dimensions of **Non-Economic Loss and Damage (NELD)**. While this was not the primary analytical focus, a small number of community narratives point towards the erosion of seasonal knowledge, changing relationships with forests and landscapes, and growing uncertainty about familiar environmental rhythms. These reflections suggest that climate change is affecting not only livelihoods and incomes but also how communities understand, remember and relate to their environments. The report treats these observations as an emerging area for deeper investigation rather than as a definitive conclusion.

Taken together, these findings suggest that rural heat is best understood not through isolated sectoral impacts, but through the relationships between ecological change, livelihoods and everyday social life. Recognising these interactions has important implications for climate adaptation, indicating the need for greater integration across heat action, water security, ecosystem restoration, livelihood resilience and local planning.

Building on these findings, the report argues that responding to Systemic Heat requires a corresponding shift towards Systemic Planning. Rather than proposing new climate-specific programmes, it underscores the potential of VB GRAM G's provisions to provide an institutional

architecture for mainstreaming climate adaptation into rural development through climate-informed planning, convergence and climate-responsive public investments. The report outlines strategic directions for strengthening water security, climate-responsive infrastructure, rural settlements and restoration-based livelihoods, illustrating how existing planning processes can be leveraged to reduce the cascading impacts of systemic heat. This positions climate adaptation not as a separate programme, but as an integral part of rural development planning and implementation.

Methodologically, the study demonstrates the value of qualitative enquiry in generating grounded evidence on lived experiences of climate change. By placing community narratives at the centre of analysis, it provides insights into how environmental changes are perceived, negotiated and accumulated over time—insights that can enrich existing climate research and inform more context-sensitive adaptation planning.

The concepts of **Systemic Heat, Cascading Vulnerabilities** and Downward Spirals of Vulnerability offer a broader analytical framework for understanding how climate risks accumulate across interconnected ecological and social systems. The report also points towards the need for deeper investigation into the non-economic dimensions of climate change that communities themselves identify as increasingly important but which remain comparatively underexplored.

Building on this analytical framework, the report lays out strategic directions for mainstreaming climate adaptation into rural development through existing flagship platforms such as VB GRAM G, offering practical pathways for strengthening climate resilience at the grassroots. In doing so, it argues that if climate risks are increasingly systemic, climate adaptation must also become systemic—embedded within the planning, implementation and governance of rural development rather than treated as a standalone response to individual hazards.

Key Messages



Rural communities experience heat as a **systemic environmental process rather than as an isolated climatic event**. Rising temperatures are understood through interconnected changes in rainfall, water, forests, agriculture, livelihoods and seasonal rhythms.



Systemic Heat generates cascading vulnerabilities that progressively create a **downward spiral of stress across health, gender and livelihoods**. Repeated environmental changes reinforce one another over time, gradually eroding households' adaptive capacity.



Beyond measurable impacts on health and livelihoods, the study also identifies emerging dimensions of **Non-Economic Loss and Damage**, including changing seasonal knowledge, environmental memory and relationships with landscapes. These findings point towards an important frontier for future research on the less visible consequences of climate change.



Viewing rural heat through the lens of Systemic Heat offers a more integrated basis for climate adaptation by recognising that heat, water, ecosystems, livelihoods and local planning are experienced as interconnected realities rather than independent policy sectors.



Life Sketch



Raveti Bamiya
Sondwa, Alirajpur

When Even the Air Changed



"अब हवा भी हवा जैसी नहीं लगती।"
"Now, even the air no longer
feels like air."

For Raveti Bamiya, climate change and extreme heat is not remembered through dates or disasters. It is remembered through the slow disappearance of things that once seemed permanent—a river that flowed throughout the year, forests that stretched beyond the village, evenings cooled by gentle winds, and a landscape where everyday life felt easier to negotiate.

Born in 1984 in Vankhad village, nestled in the hilly Bhilala landscape of Sondwa Block, Alirajpur District near the Madhya Pradesh-Gujarat border, Raveti grew up in a world where the river never ran dry. Families fetched water directly from flowing streams. Forests supplied fuelwood, wild vegetables and grazing grounds. Rain arrived softly over several months, and summers, though warm, rarely became unbearable. She remembers accompanying her grandfather into the forest while livestock grazed. Those journeys were never about a single task. He returned with fuelwood, collected gond from trees, gathered other minor forest produce that could be sold, and brought back resources that sustained both the household and its modest income. The forest was not merely a backdrop to village life—it was part of the village's economy, culture and rhythm.

Marriage did not immediately change those memories. Even after moving to her husband's home nearby in the late 1990s, she recalls the river flowing for another four or five years before it slowly became seasonal. The transformation was gradual enough that no single year seemed remarkable. Yet, looking back today, she sees an entirely different landscape. Forests have thinned, streams have disappeared for much of the year, grazing lands have shrunk, and many wild foods that once supplemented household diets are no longer found. What disappeared first were not livelihoods, but the ecological relationships that quietly sustained them.

Perhaps the most striking consequence of this ecological change has been the quiet redistribution of labour within the household. Raveti remembers that collecting fuelwood was once intertwined with men's work in the forest. While grazing cattle or gathering forest produce, they would return with enough wood for the household. As forests retreated and nearby fuelwood became scarce, that arrangement gradually dissolved. Today, collecting firewood has increasingly become another responsibility carried by women. Raveti now walks two to three kilometres to gather wood, often returning with only enough to meet the family's immediate needs. The forest has not simply moved farther away; its retreat is measured in the additional hours women spend walking, searching and carrying.

Water tells a similar story. The river that once supplied the village throughout the year has given way to borewells, handpumps and long queues. A household of six requires hundreds of litres of water each day—for cooking, washing, livestock and sanitation. Raveti estimates that this means making ten to twelve trips before noon and several more in the evening, walking several kilometres daily with heavy containers balanced on her head. During summer, exhaustion, dizziness, burning eyes and headaches have become ordinary companions of this work. Yet the work cannot wait. Livestock must drink. Meals must be cooked. Water determines the rhythm of every day. Women often leave self-help group meetings midway because household water needs cannot be postponed.

These changing ecological realities spill quietly into social life. Scarcity of water or delays in collecting fuelwood become sources of tension within households. Expectations surrounding women's responsibilities remain unchanged even as the labour required to fulfil them has grown heavier. Climate change, in her account, does not directly create inequality. Instead, it magnifies the burden carried within relationships that were already unequal.

Towards the end of the conversation, Raveti reflects not on rivers or forests, but on the air itself. Cement-roofed houses built under housing schemes trap heat more than the older dwellings they replaced. Tall trees that once softened hot winds have disappeared. Even the evenings, once a time of relief after a day's work, now remain oppressively warm. People increasingly sleep outdoors in their fields during summer, yet comfort remains elusive.

"अब हवा भी हवा जैसी नहीं लगती," she says.

It is a deceptively simple sentence. It is not merely about hotter weather. It is about the loss of familiarity. Air, once associated with relief and comfort, has itself become uncomfortable. The landscape she has inhabited all her life now feels fundamentally altered, not because of one dramatic event, but because countless small changes have accumulated over time.

Raveti's story is ultimately not a story of disaster. It is a story of slow erosion—of rivers becoming seasonal, forests becoming distant, household labour becoming heavier, and evenings losing their cool. Through her memories, climate change appears not as a single environmental crisis but as a gradual reshaping of everyday life. Her account reminds us that the deepest impacts of climate change are often recognised not through extraordinary events, but through the quiet realisation that the landscapes people once trusted no longer behave in the ways they remember.

The life sketch provides an early illustration of the processes examined in this report. Although outside the two primary study landscapes, Raveti Bamiya's narrative captures the gradual ecological decline, intensifying household labour and altered experience of the environment that recur throughout the fieldwork.



01

Understanding Heat Beyond Heatwaves: Why This Study?

“ Firewood has to be fetched from afar—the forest is distant. Earlier, all the women went together. They collect it in one month and stock enough for the entire year. In winter, if extra guests arrive, they return to the forest for more. In summer, the forest floor is full of pebbles, making walking hard because of the constant fear of slipping. It takes at least two hours to gather the wood. Climbing the hills, going up and down, and carrying the load home is extremely exhausting.

*A reflection from a Focus Group Discussion (FGD)
with women of Upla, Rajpur*

1.1 Why This Study?

Extreme heat has emerged as one of the most significant climate risks confronting India. Once viewed primarily as a public health concern associated with heatwaves, it is now increasingly recognised as a broader development challenge affecting labour productivity, agriculture, water security, ecosystems, livelihoods and social well-being. This shift has been accompanied by significant advances in both scientific research and public policy. Heat Action Plans, early warning systems and institutional coordination have been strengthening India's preparedness for extreme heat, while an expanding body of interdisciplinary research is emerging to broaden the understanding of heat beyond meteorology to encompass questions of livelihoods, governance, inequality and environmental justice.

An important contribution to this evolving understanding has been the growing recognition that **heat vulnerability is not determined by temperature alone**. The work of the Council on Energy, Environment and Water (CEEW)¹ has demonstrated that heat risk emerges through the interaction of **hazard exposure, socio-economic sensitivity and adaptive capacity**. Consequently, two districts or blocks experiencing similar temperatures may exhibit markedly different levels of vulnerability depending upon their livelihoods, ecological conditions, water availability, housing, health and institutional preparedness. This shift from measuring temperatures to understanding vulnerability could substantially strengthen climate adaptation planning and enable governments to

identify locations where adaptation interventions are likely to have the greatest impact.

At the same time, the discourse on extreme heat has expanded considerably. Recent scholarship increasingly views heat as a challenge that extends beyond public health to encompass labour, housing, gender, governance and environmental justice. The **Harvard Salata Institute's** Critical Perspectives on Extreme Heat in India² reflects this broader framing, while Jeff Goodell, in *The Heat Will Kill You First*³ argues that heat should no longer be understood merely as an episodic climatic event but as a pervasive environmental condition shaping the way societies function. Similarly, emerging research on indoor heat exposure has highlighted the significance of warmer nights and indoor thermal stress, while the **Adaptation at Scale in Semi-Arid Regions (ASSAR)** programme has demonstrated how rising temperatures interact with livelihoods, water systems and ecological processes across semi-arid landscapes, including regions ecologically comparable to western Madhya Pradesh.

Collectively, these developments have transformed the understanding of extreme heat and significantly strengthened climate adaptation policy. Yet, they also reveal an important analytical limitation. Most existing research necessarily examines heat through particular sectors or policy domains—public health, labour, agriculture, water, housing or disaster management. Likewise, Heat Action Plans continue to be organised predominantly around heatwave preparedness and emergency response, within urban geographies. These approaches remain indispensable. However, they tell us comparatively little about how rural communities themselves

¹ Council on Energy, Environment and Water (CEEW) (2025), How extreme heat is impacting India. Available at: <https://www.ceew.in/sites/default/files/mapping-climate-risks-and-impacts-of-extreme-heatwave-disaster-in-indian-districts.pdf> (Accessed: 16 July 2026)

² The Salata Institute for Climate and Sustainability, Harvard University (2026), Critical Perspectives on Extreme Heat in India. Available at: https://salatainstitute.harvard.edu/wp-content/uploads/2026/04/April-2026-Critical-Perspectives-on-Extreme-Heat-in-India_web.pdf (Accessed: 14 July 2026)

³ Goodell, J. (2023) *The heat will kill you first: life and death on a scorched planet*. New York: Little, Brown and Company.

experience rising temperatures in their everyday lives, where agriculture, forests, water, livelihoods, household responsibilities and seasonal rhythms are continuously intertwined rather than experienced as separate domains.

It was precisely this question that gradually emerged through Transform Rural India's field engagements across Madhya Pradesh during early 2026. While supporting climate adaptation and rural development initiatives across different districts of Madhya Pradesh and Chhattisgarh, repeated interactions with communities began revealing patterns that were difficult to reconcile with prevailing discussions on extreme heat. Villagers rarely described changing temperatures in isolation. Conversations that began around intense summer heat frequently shifted towards rainfall, forests, streams, agriculture, livestock, household work and seasonal uncertainty. Environmental change was often interpreted through altered flowering cycles, changing forest behaviour, declining soil moisture, drying water sources and disruptions in long-established seasonal rhythms. These recurring observations prompted a broader institutional reflection within TRI. While existing evidence had significantly advanced the understanding of heat from the perspectives of exposure, vulnerability, public health, labour, agriculture and water security, it remained less clear whether these sectoral perspectives adequately reflected how rural communities themselves understood environmental change. Rather, the villagers

understood environmental change as a set of interacting processes in which rising temperatures, changing rainfall, ecological shifts, water availability, agricultural practices and livelihoods continuously influenced one another. What appeared as separate sectors within research and policy frequently merged into a single lived experience within rural communities.

Recognising this gap, Transform Rural India (TRI) conceptualised the present study as a systematic qualitative enquiry into how rural communities understand and experience rising temperatures across contrasting rural landscapes of Madhya Pradesh. Rather than beginning with predefined sectoral categories such as agriculture, water or health, the study sought to foreground lived experiences and community narratives, allowing local understandings of thermal and environmental change to shape the enquiry.

The central challenge, therefore, was not simply to document the impacts of rising temperatures, but to examine how climate change is experienced in everyday rural life and whether these experiences can be understood through existing sectoral frameworks. In doing so, the study asks a broader question: **How do rural communities experience and make sense of rising temperatures in their everyday lives, and what becomes visible when these experiences are understood as interconnected ecological and social processes rather than as isolated climatic impacts?**

Transform Rural India (TRI) conceptualised the present study as a systematic qualitative enquiry into how rural communities understand and experience rising temperatures across contrasting rural landscapes of Madhya Pradesh. Rather than beginning with predefined sectoral categories such as agriculture, water or health, the study sought to foreground lived experiences and community narratives, allowing local understandings of thermal and environmental change to shape the enquiry.

It is this core question that frames the present enquiry and analysis.

1.2 Objectives of the Study

Guided by this research question, the study pursues four interrelated objectives.

First, it seeks to understand how rural communities across two contrasting landscapes of Madhya Pradesh perceive, interpret and describe changing environmental conditions associated with rising temperatures.

Second, it examines how these experiences are mediated through different ecological pathways, with particular attention to the relationships between heat, rainfall variability, water availability, forests, agriculture, livelihoods and household organisation.

Third, it compares these experiences across contrasting rural geographies to identify both recurring patterns and context-specific differences in the ways environmental change is understood and negotiated.

Finally, the study seeks to explore whether the lived experiences of rural communities point towards a broader conceptual understanding of rising temperatures beyond existing sectoral frameworks, and to develop an analytical framework grounded in these empirical insights

Accordingly, the report seeks not only to document changing environmental conditions but also to understand how these changes are interconnected within everyday rural life and what these relationships reveal about the evolving nature of climate risk in rural India

1.3 Structure of the Report

This report is organised into eight chapters. Following this introduction, Chapter Two outlines the study design, research methodology and analytical approach adopted for the enquiry. Chapters Three and Four present the empirical findings, examining how rising temperatures are experienced across contrasting rural landscapes and how environmental change reshapes everyday life, livelihoods and social organisation.

Building on these findings, Chapter Five analyses the interconnections between ecological and social changes through the concept of cascading vulnerabilities. Chapter Six develops the report's central analytical contribution by further contextualising the concept of Systemic Heat in rural geography for understanding rising temperatures as a relational and cumulative process. Chapter Seven discusses the implications of the study for climate adaptation policy, rural development practice and future research. Finally, Chapter 8 recommends a few strategic directions for flagship programmes like VB GRAM G, that hold the promise of strengthening climate resilience at the grassroots.





02

Study Design and Analytical Approach

“

The rains these days come in short bursts—once, then stop—only to return after a gap of several days. But these intervening dry spells have been growing longer over the past few years. As a result, the crops suffer. Earlier, the moisture from the June rains was enough for one crop, and the same residual moisture even supported a second crop in November. Now the soil holds no moisture at all. Even after irrigating two or three times before the rabi season, the crop fails to establish properly. Well water has dwindled so much that a third crop, such as urad (black gram), is no longer possible.

Personal account of a marginal farmer from Jamuniya (Bijadandi, Mandla district) Rajpur

2.1 Study Context

This report is based on qualitative fieldwork undertaken during 2026 across two contrasting rural landscapes of Madhya Pradesh. The fieldwork formed part of a broader programme examining rural livelihoods, natural resource management and climate resilience. While the wider programme addressed multiple themes, repeated discussions around changing environmental conditions gradually revealed the need for a focused inquiry into how climate change is experienced within everyday rural life.

Rather than beginning with a predefined analytical framework built around existing quantitative datasets like datasets on Land Surface Temperatures or wet-bulb temperatures, the study evolved from the initial discussion in the field and took a structured approach. Initial interviews explored seasonal change, livelihoods and village environments. As conversations accumulated, recurring relationships between heat, rainfall, agriculture, water, forests and household life became increasingly apparent. These observations subsequently shaped the analytical direction of the study, allowing concepts to emerge from the field material rather than being imposed upon it.

2.2 Selection of Study Areas

The selection of study sites followed a nested sampling logic within the intervention geographies of Transform Rural India (TRI) in Madhya Pradesh. TRI currently works across seven socio-economically marginalised districts through eight Community Action Labs (CALs), where it maintains long-term engagement with rural communities on issues of livelihoods, gender, health and overall rural development. These intervention geographies provided the sampling frame for the study.

Within this frame, districts were selected to represent contrasting climatic and ecological

settings. Subsequently, TRI intervention blocks were chosen because they comprise environmentally and socio-economically vulnerable landscapes where climate-related stresses have been consistently observed through TRI's field engagements. Finally, villages were purposively selected to capture variation in geographical setting, remoteness and accessibility while ensuring representation of predominantly tribal communities, whose lived experiences remain comparatively underrepresented in research on heat and climate vulnerability.

Rajpur Block, Barwani District

Barwani District represents one of the most heat-stressed landscapes in Madhya Pradesh. Analyses of Indian Meteorological Department (IMD) gridded observations indicate that the state has experienced statistically significant warming over recent decades (Kumar et al., 2023). Complementing this evidence, a recent district-level heat risk assessment by the Council on Energy, Environment and Water (CEEW) identifies Barwani as one of the state's very high heat-risk districts owing to the combined influence of extreme temperatures, exposure and socioeconomic vulnerability (Prabhu et al., 2025).

Located in the **lower Narmada Valley**, where low elevations and the rain-shadow influence of the **Vindhya and Satpura ranges** reinforce hot, dry summer conditions, Barwani district experiences prolonged thermal stress and recurrent water deficits. Community consultations conducted during the preparation of the **Barwani District Climate Resilience Plan (2021–2030)** similarly identified rising daytime and night-time temperatures as the most significant climatic changes experienced over the preceding two to three decades (CANSa & EFICOR, 2021). These interacting climatic and geographical characteristics provided an opportunity to examine how sustained heat exposure shapes agriculture, wage labour and everyday rural life.

Within this landscape, Rajpur Block represents a socially and economically vulnerable setting

characterised by semi-arid agriculture, irrigated cultivation in selected pockets, wage labour and livestock-dependent livelihoods. Fieldwork was undertaken in the predominantly Tribal Bhil-Barela villages of **Bhagsur, Ekalbara, Matli and Upla**. Discussions in these villages frequently centred on extreme summer conditions, agricultural work, water scarcity and changing daily routines, reflecting the centrality of direct thermal exposure in shaping everyday life.

Bijadandi Block, Mandla District

Mandla District provided an ecologically distinct contrast to Barwani, where climate stress is mediated primarily through hydro-climatic variability rather than persistent thermal stress. Situated on the forested Satpura Plateau within the upper Narmada basin, the district receives abundant southwest monsoon rainfall. A CEEW tehsil-level assessment of India's changing monsoon patterns reports that Mandla records a long-period average rainfall of approximately **1,430 mm** during the southwest monsoon season (June–September) (Prabhu and Chitale, 2024). Despite this relatively high seasonal rainfall, its distribution is highly variable, with the greatest inter-annual variability

occurring during **June and September**—the onset and withdrawal phases of the southwest monsoon. The CEEW assessment also documents an increasing frequency of dry spells, pointing to growing uncertainty in the timing and distribution of seasonal rainfall. Such hydro-climatic conditions, coupled with predominantly rain-fed agriculture and forest-dependent livelihoods, provided an opportunity to examine how changing monsoon regimes influence agricultural practices, forest use and everyday experiences of environmental change.

Within this setting, Bijadandi Block was selected because of its strong dependence on forests, rain-fed agriculture and climate-sensitive livelihoods. Fieldwork was undertaken in the predominantly Tribal, Gond villages of **Jamuniya and Samnapur**, where respondents more frequently discussed changing rainfall patterns, seasonal uncertainty, forest change and ecological transformations than direct experiences of extreme heat.

Taken together, these two landscapes provided maximum ecological contrast within a shared regional context. The intention was not to compare which landscape was more vulnerable, but to examine whether recurring patterns of lived experience emerged despite differences in geography, climate and livelihoods.



2.3 Research Design

The study adopted a comparative qualitative research design.

A qualitative approach was considered appropriate because the study sought to understand how rural communities perceive, interpret and negotiate environmental change in their everyday lives rather than measure the prevalence of particular climatic impacts. Meteorological records, hydrological datasets, agricultural statistics and climate risk assessments provide indispensable evidence on patterns of exposure and vulnerability. However, they reveal comparatively little about how people themselves make sense of changing seasons, water availability, forests, livelihoods and everyday practices. It was thought that this granularity would further enrich the existing evidence and help design better interventions/strategies for adaptation. Addressing these questions and adding the desired granularity to existing knowledge required an interpretive approach grounded in lived experience.

Accordingly, the study treated community narratives not merely as descriptions of environmental change but as forms of situated knowledge through which people understand, explain and respond to changing environmental conditions. Rather than replacing quantitative evidence, qualitative enquiry complements it by illuminating relationships and processes that often remain invisible within conventional climatic and socio-economic datasets.

Fieldwork employed a combination of personal interviews, focus group discussions (FGDs), key informant interviews, participant observation and visual documentation. Across the two study blocks, 20 semi-structured interviews were conducted with farmers, agricultural labourers, women, artisans and other community members to capture diverse livelihood experiences and perceptions of environmental change. In addition, eight FGDs facilitated collective reflection on climate-related

changes, while participant observation provided contextual insights into village environments, livelihood practices and seasonal conditions. Of the eight FGDs, four were conducted exclusively with women and four with mixed groups comprising both men and women. The women's groups included agricultural workers, homemakers, school staff, women entrepreneurs and members of Self-Help Groups (SHGs), ensuring representation of diverse socio-economic roles. Visual documentation and participant observation were undertaken in everyday public spaces that reflected local livelihood dynamics. In Rajpur, these included the livestock market (Bakra/Maveshi Bazar), vegetable market (Sabzi Mandi) and labour market (Labour Mandi), while in Bijadandi they were conducted in the weekly markets of Bijadandi, Udaipur and Barela.

Using multiple qualitative methods enabled triangulation across different sources of evidence and strengthened confidence in the analytical interpretations developed in this report.

Also, The study was conducted during a single period of fieldwork and does not constitute a longitudinal investigation. Observations regarding environmental and climatic change are therefore based on respondents' retrospective accounts and lived experiences rather than repeated observations over time. During interviews and focus group discussions, participants were generally encouraged to reflect on environmental changes observed over approximately the previous decade. However, particularly among older respondents, recollections occasionally extended beyond this period and drew upon longer-term lived experiences. Accordingly, the findings should be interpreted as participants' perceptions and narratives of environmental change rather than direct longitudinal measurements of temporal change.

2.4 Comparative Reading

Rajpur and Bijadandi are not presented as independent case studies. Instead, they are read comparatively through the lens of lived experiences of heat. The purpose of comparison is not to determine which location is more vulnerable, but to identify recurring relationships while remaining attentive to geographical differences.

This comparative strategy proved particularly valuable during analysis. Direct thermal experiences were more prominent in Rajpur, while changes mediated through rainfall variability, water availability and ecological systems were more prominent in Bijadandi. Yet across both landscapes, respondents consistently described environmental changes as interconnected rather than isolated. It was this recurring pattern across contrasting ecological settings that gradually shaped the analytical framework developed in the subsequent chapters.

2.5 Analytical Approach

Analysis proceeded through iterative reading and coding of interview transcripts, focus group discussions and field notes.

Initial coding broadly followed familiar thematic categories such as heat, rainfall, water, agriculture, forests, livelihoods, health and household work. However, respondents themselves rarely maintained such distinctions. Conversations repeatedly moved across these themes, making it increasingly difficult to interpret them independently.

The analysis therefore shifted from thematic coding towards relational interpretation. Rather than asking what respondents said about individual environmental changes, the study examined how different experiences became connected within everyday life. This shift enabled patterns that were

less visible within conventional thematic analysis to emerge through repeated comparison across interviews and field observations.

The analytical progression presented in this report therefore mirrors the progression of the fieldwork itself. Rather than imposing a conceptual framework at the outset, the study allowed recurring patterns within community narratives to shape successive stages of interpretation. The concepts of **Systemic Heat, Cascading Vulnerabilities** and **Downward Spirals of Vulnerability** should therefore be understood as empirically grounded analytical constructs that emerged through sustained engagement with the field material, rather than as predefined theoretical categories.

2.6 Scope and Limitations

This study is based on qualitative fieldwork conducted across two contrasting rural landscapes and does not seek statistical representation for rural Madhya Pradesh.

Its contribution lies in developing analytical insights into lived experiences of climatic change rather than estimating the prevalence of particular impacts. The selection of contrasting ecological settings was intended to strengthen analytical comparison rather than produce representative sampling.

The study is also not longitudinal. While participants frequently reflected on environmental changes occurring over many years, the fieldwork captures these experiences at a particular point in time rather than following households across multiple seasons or years.

These considerations define the scope within which the report's findings should be interpreted. Accordingly, the insights presented in this report are intended to be analytically transferable rather than statistically generalisable.



03

Listening to Two Rural Landscapes: Narrating a Changing Climate in Rural Madhya Pradesh

3.1 Narrating Climate Through Everyday Life

The field narratives emerging from Rajpur and Bijadandi suggest that rural communities rarely perceive climatic change as a series of discrete environmental events. Rather than describing rising temperatures, declining rainfall or changing seasons as independent phenomena, respondents consistently situated these changes within the routines and relationships that structure everyday life. Conversations moved fluidly between agriculture, forests, water, livestock, health, mobility and household responsibilities, revealing an understanding of climate embedded in lived experience rather than abstract environmental concepts.

At the same time, the two landscapes differed in the ways these narratives unfolded. Across Rajpur, discussions almost invariably returned to the experience of summer. Whether respondents were describing agricultural work, domestic responsibilities, livestock care or access to water, prolonged periods of intense heat formed the backdrop against which these activities were organised. In Bijadandi, by contrast, environmental change was more frequently narrated through rainfall, forests and seasonal rhythms. Respondents spoke of changing monsoons, flash floods, damaged roads, agricultural uncertainty and forest resources, while also noting that recent summers had become noticeably hotter than they remembered.

These differences reflected distinct ecological contexts rather than fundamentally different experiences of climatic change. Across both landscapes, respondents described increasing uncertainty in the timing, intensity and predictability of seasonal conditions. The environmental vocabulary differed, but the underlying concern was remarkably similar: the growing difficulty of organising livelihoods and everyday life around climatic conditions that had become progressively unpredictable.

The empirical analysis presented in this chapter draws primarily upon focus group discussions, personal interviews and key informant interviews conducted across the two study landscapes. These narratives are complemented by field observations recorded during village visits, interactions at labour congregation points, weekly markets and livestock markets, and visual documentation undertaken throughout the fieldwork. While these observations are not treated as independent datasets, they provide important contextual insights into how climatic conditions shape rural life beyond the formal interview setting. Together, these multiple sources of evidence offer a grounded understanding of how environmental change is experienced, interpreted and negotiated within two contrasting rural landscapes of Madhya Pradesh.

3.2 Rajpur: Summer as the Organising Principle of Everyday Life

Across Rajpur, respondents rarely described heat as an isolated environmental phenomenon. Instead, summer emerged as the organising principle around which agricultural work, household responsibilities, livestock management and everyday mobility were arranged. Across focus group discussions and interviews in Ekalbara, Upla, Matli and Bhagsur, respondents narrated not simply rising temperatures but the reorganisation of time, labour and everyday routines.

Reorganising the Working Day

One of the most visible changes described across the study villages was the reorganisation of daily routines during the summer months. Participants consistently reported that the period during which outdoor work remained physically feasible had become shorter, resulting in a noticeable compression of the working window. Agricultural work, domestic chores and livestock care gradually had to be organised within the relatively cooler hours of the morning, before the afternoon heat

became difficult to endure. Women in Bhagsur described beginning their day around five or six in the morning with sweeping, preparing food and completing household work before leaving for the fields around seven. Most respondents reported returning home by noon or shortly thereafter because continuing work under the afternoon sun had become increasingly difficult. As one participant explained:

“हम लोग सुबह सात बजे तक काम पर निकल जाते हैं। बारह-एक बजे तक सब वापस लौट आते हैं। उसके बाद इतनी गर्मी हो जाती है कि काम करना मुश्किल हो जाता है।”

"We leave for work by seven in the morning. By twelve or one, everyone returns. It becomes too hot to continue working."

Respondents rarely described these changes as deliberate adaptations to climate change. Instead, they spoke of them as practical adjustments that had gradually become part of everyday life. Summer work was no longer organised around the amount of work remaining but around the limited hours during which outdoor labour remained physically possible.

The effects of this compressed working window extended beyond agriculture. Women repeatedly described fitting cooking, childcare, water collection, livestock care and agricultural labour into a much narrower morning schedule. Fulbai from Upla village in Rajpur illustrated how these routines unfolded during the agricultural season:

"3 बजे ही उठ जाती हूँ। खाना बनाकर, घर का काम निपटाकर तैयार होना पड़ता है। 5 बजे हमें ले जाने के लिए टेम्पो-बस आ जाती है।" "I wake up at three in the morning. After cooking and finishing the household chores, I have to be ready because the tempo-bus arrives at five to take us to work."

She explained that women from her village travelled to Rajpur for seasonal agricultural wage labour, undertaking tasks such as weeding, cotton planting and groundnut harvesting before returning home later in the day.

These observations were reinforced at labour congregation points, where workers assembled before sunrise while waiting for transport or daily wage employment. Informal conversations indicated that early starts were driven less by preference than by economic necessity, as workers sought to maximise the limited hours during which outdoor labour remained physically possible. While respondents regarded these routines as ordinary features of everyday life, the observations suggest that rising heat was influencing not only individual daily schedules but also the organisation of rural labour markets.

Living with Heat

As women reflected on their experiences of increasingly hot summers in recent years, many described a shared bodily experience.

"गर्मी के दिनों में अचानक घबराहट-सी हो जाती है, काम करते समय कभी साँस फूलती है।"

"During the hot summer months, I suddenly experience a sense of unease, and I find myself breathing more heavily while working."

was a recurring refrain across discussions, conveying how prolonged heat had become an ordinary yet physically demanding part of everyday work. Respondents consistently described the bodily experience of prolonged heat exposure, speaking of tiredness, headaches, dizziness, excessive sweating and persistent fatigue after only a few hours of outdoor work. Women explained that even after returning home from agricultural labour, exhaustion often lingered throughout the afternoon, reducing their ability to undertake household tasks until evening. Headaches, dizziness and breathlessness had become common, making frequent breaks in the shade and repeated drinking of water necessary.

These experiences were rarely described as illnesses requiring medical attention. Respondents viewed them as an ordinary part of summer. Households relied on behavioural adjustments that

had gradually become embedded in everyday life: beginning work before sunrise, resting beneath trees during the hottest hours, drinking water frequently and avoiding unnecessary movement in the afternoon. Prolonged heat exposure had become normalised within everyday agricultural life.

Thermal stress also extended into domestic spaces. Concrete houses absorbed and retained heat, making indoor spaces particularly uncomfortable during the afternoon and well into the night. In Upla and Matli, women shared that the newly built concrete houses were used mainly for cooking, accessing kitchens and sanitation facilities. However, they preferred to sleep in their old kachha houses or in the courtyards to avoid the indoor heat. As Shevanti Didi from Upla explained,

"रात में 10–11 बजे तक बहुत गर्मी लगती है। घर के अंदर सोते हैं तो नींद नहीं आती। इसलिए लोग बाहर सोते हैं। अगर पंखा चले तो घर में सो लेते हैं, लेकिन बिजली कभी रहती है, कभी नहीं।"

"It remains unbearably hot until ten or eleven at night. If we sleep inside the house, we cannot fall asleep, so people sleep outside. We sleep indoors only if the fan is running, but electricity comes and goes."

Her account illustrates how heat persisted well into the night, while unreliable electricity further limited opportunities for relief. Many families therefore spent evenings outdoors or slept in open courtyards whenever possible. Warm nights disrupted sleep, leaving people feeling tired before the following day's work had begun. The effects of summer therefore extended beyond working hours, influencing recovery and the capacity to sustain physically demanding labour over successive days.

Field observations at weekly markets and livestock markets showed that traders, customers and livestock owners increasingly reorganised their activities around the hottest hours. Vendors sought temporary shade, livestock were watered more frequently, and customer activity declined sharply during the afternoon before recovering towards evening. The rhythm of rural markets increasingly followed the thermal rhythm of summer.

The Labour of Staying Cool

Respondents also highlighted a less visible dimension of coping with summer: the labour required to stay cool. While interacting with families in Upla and Matli villages, we saw desert coolers. In households that owned coolers, these devices offered possible relief but consumed large quantities of water and often required refilling several times a day. In the phalias / hamlets of Upla, where piped water was limited or unreliable, this meant fetching multiple buckets daily, frequently from sources some distance from the house.

Women explained that when they were alone at home or accompanied only by children, they often chose not to use the cooler. The repeated trips under intense afternoon heat made the effort physically exhausting. Many preferred to endure the heat indoors rather than undertake the additional burden of collecting water.

Thermal comfort was therefore determined not simply by the availability of cooling technology, but by the availability of water and the unpaid labour required to secure it. Access to coolers and reliable piped water varied across the four villages; the additional labour of water collection for cooling was reported most clearly where both technology and supply were present but incomplete.

Caring for Livestock in Summer

Livestock management emerged as another domain through which respondents perceived climatic change. Participants consistently observed that cattle and goats required substantially greater care during summer than during winter. Animals demanded more frequent watering, greater access to shade and closer supervision during the hottest hours. Women explained that while watering livestock once during winter had often been sufficient, summer now required repeated trips because animals consumed significantly larger quantities of water.



These observations reveal that heat affected livelihoods not only through human labour but also by increasing the time and effort required to maintain livestock. Caring for animals became another component of the expanding summer workload, particularly for women who already balanced agricultural work with domestic responsibilities. Several respondents contrasted present demands with earlier years when residual moisture and denser vegetation had reduced the intensity of summer care.

Emerging Changes in Everyday Social Life

Beyond livelihoods and household routines, respondents also described subtle but important changes in everyday social and institutional life.

Several participants observed that prolonged summer heat was progressively influencing when people gathered, how public institutions functioned and even the timing of important family events. An ASHA worker from Upla remarked, "ज़िंदगी पहले जैसी नहीं रही है" ("Life is no longer the way it used to be"), explaining that marriages, traditionally organised across different seasons, were now increasingly being held during the monsoon because of growing water scarcity and the difficulty of organising events during the intense summer months. She also reflected that the increased workload during summer often made people more irritable, remarking,

"गर्मी के दिनों में काम ज़्यादा हो जाता है, तो गुस्सा भी आ जाता है"

"During the summer, the workload increases, and people become more short-tempered."

Similar observations emerged regarding local governance. Participants explained that Gram Sabha meetings continued to be convened, but attendance during the summer months was often poor because many villagers avoided travelling in the afternoon heat. As one respondent noted, "ग्राम सभा तो होती है, लेकिन धूप के कारण लोग आते नहीं हैं" ("Gram Sabha meetings are held, but people do not come because of the heat."). Respondents further observed that those with access to vehicles were more likely to attend, while others preferred to stay home after receiving information through their mobile phones.

Access to essential public services was also described as becoming more difficult during periods of intense heat. In both Matli and Upla, participants highlighted challenges in collecting subsidised food grains from the Public Distribution System (PDS). Ration shops were often located more than a kilometre away, requiring beneficiaries to walk in high temperatures and wait in long queues with little

or no shaded seating. Participants noted that food grains were not always available on the first visit, often requiring repeated trips. Although visiting the shop in the evening would have been preferable, respondents explained that shop timings and staff availability seldom aligned with cooler hours of the day.

Reading Heat Through the Landscape

The most striking feature of the Rajpur narratives was the way respondents explained increasing heat. Very few referred immediately to climate change or rising temperatures in abstract terms. Instead, they interpreted hotter summers through visible transformations in the surrounding landscape. Declining tree cover, shrinking forests, expansion of cultivated land, intensive groundwater extraction and the gradual disappearance of natural vegetation were repeatedly identified as



interconnected processes contributing to rising temperatures.

Older respondents frequently contrasted the present landscape with memories from three decades earlier. They recalled that dense tree cover once shaded agricultural fields, streams retained water well into the dry season and surrounding forests moderated local temperatures. Over time, forests had receded, cultivated land had expanded and electrically powered borewells had enabled deeper groundwater extraction. For respondents, these changes were not separate environmental processes but interconnected transformations that had made summers noticeably hotter than before.

Water occupied a central place within these narratives. While improved access to piped drinking water in Phalias of Bhagsur and Upla had reduced the burden of domestic water collection for some women, respondents simultaneously expressed concern over declining groundwater levels and increasing dependence on irrigation infrastructure. The availability of drinking water had improved, they noted, but the landscape itself appeared drier, with falling water tables reinforcing concerns about the long-term sustainability of agriculture and rural livelihoods.

Taken together, these narratives reveal that respondents understood rising temperatures not simply as a change in weather but as the outcome of broader ecological transformations. Heat was read through changing forests, groundwater, vegetation and the drying of the landscape, rather than as an isolated climatic phenomenon.

3.3 Bijadandi: Reading a Warmer Climate Through the Changing Monsoon

If summer provided the dominant frame through which climatic change was understood in Rajpur, respondents in Bijadandi narrated environmental change through the changing

monsoon. Across focus group discussions and personal interviews conducted in Jamuniya and Samnapur, conversations rarely began with rising temperatures. Instead, respondents spoke of changing rainfall, overflowing streams, damaged roads, interrupted mobility and shifting agricultural seasons. Their accounts suggest that the defining feature of climate change in this landscape is not simply increasing rainfall variability, but the growing unpredictability of the monsoon and the multiple disruptions that unfold when movement, work and everyday life become increasingly dependent on uncertain weather.

A Summer That Felt Different

Although respondents in Bijadandi primarily narrated climatic change through the monsoon, discussions repeatedly returned to an observation that lay outside the seasonal rhythm they were describing. Many participants remarked that the summer preceding the fieldwork had felt unusually hot. Outdoor movement during the afternoon had become uncomfortable, household work was frequently postponed, and resting indoors offered little relief because of the accumulated heat within dwellings.

Unlike Rajpur, these observations did not dominate the discussion. Respondents continued to interpret climatic change primarily through the changing monsoon, yet progressively warmer summers formed an important backdrop. The two landscapes differed in the pathways through which a warming climate was experienced. In Rajpur, heat directly reorganised everyday life; in Bijadandi, it was understood largely through changing rainfall, seasons and ecological conditions.

Women's Work Across a Changing Ecology

Discussions in Jamuniya revealed that changing climatic conditions were experienced not only in agricultural fields but equally within the everyday

work of maintaining a household. Women described cooking on traditional wood-fired stoves, sweeping, collecting water and gathering fuelwood as becoming more strenuous during the summer months. Fetching water demanded repeated trips as handpumps yielded less water, while fuelwood collection became more difficult because access to nearby forests had reduced and forest protection had become stricter. These responsibilities remained indispensable even when outdoor conditions became physically exhausting.

These ecological changes were also visible in household nutrition. Women pointed to Poshan Vatikas, where vegetables such as spinach, tomato, okra and brinjals were once cultivated for domestic consumption. Increasing summer heat, declining water availability and poor moisture retention now made these gardens difficult to sustain, with vegetables drying quickly despite efforts to irrigate them. Respondents in Bijadandi described how changing relationships between rainfall, soil moisture, water availability and forests gradually reshaped the everyday work of sustaining a household.

The Changing Character of Rainfall

One of the strongest themes was that rainfall itself had changed its character. During the FGD in Jamuniya Village, the older women repeatedly contrasted the present monsoon with memories from their childhood. As Babita Didi observed:

"Earlier it used to rain throughout the season. Now it doesn't rain every day, but when it does, it falls very heavily."

Respondents consistently described a monsoon characterised by fewer but more intense rainfall events, replacing the gradual and evenly distributed rainfall they remembered from earlier decades. Heavy raindrops tore maize leaves, reduced crop quality and accelerated soil erosion by washing

away fertile topsoil. Climatic change, in their experience, was expressed less through declining rainfall totals than through a fundamental shift in how rain arrived and behaved.

The Lengthening Dry Intervals Within the Monsoon

Equally significant were the increasingly longer dry intervals that followed each spell of rain. Participants explained that these gaps had lengthened over the past few years, allowing soils to dry rapidly despite receiving substantial rainfall during the season. As one marginal farmer from Jamunia village in Bijadandi (Mandla) described:

"बारिश एक बार होकर रुक जाती है। फिर कई दिनों बाद दोबारा आती है। इस बीच का सूखा अंतराल अब इतना बढ़ गया है कि जमीन में नमी नहीं टिकती, कुओं का पानी घटता जा रहा है और तीसरी फसल लेना अब संभव नहीं रह गया है।"

"The rains come once and then stop. They return only after many days. The dry gap between rainfall events has now become so long that the soil no longer retains moisture, the water level in our wells keeps falling, and cultivating a third crop is no longer possible."

Earlier, respondents explained, residual soil moisture often sustained cultivation beyond the monsoon and supported a second or even third crop. Today, even repeated irrigation before the rabi season frequently proved insufficient because the soil no longer retained moisture. The concern was not simply that rainfall had become erratic, but that the landscape no longer remained moist for long enough to sustain agriculture in the way it once had.

When the Roads Disappear

The most striking aspect of the Jamuniya discussions emerged when the conversation shifted to floods. Participants who had responded individually until then began speaking together, recounting personal experiences of flooding, overflowing streams and disrupted journeys.

These stories were not primarily about flood damage. They were about interruption. Women repeatedly described waiting for floodwaters to recede before they could leave the village, reach nearby roads or resume everyday activities. Water rushing down from the surrounding hills rapidly filled local *nalas*, often making crossings unsafe. Mobility during the monsoon was governed less by schedules than by the behaviour of water itself.

These interruptions were particularly evident in relation to education. Poonam Rai, who works as a school cook, explained that schools frequently closed early whenever heavy rainfall was anticipated. As she described,

"ये तो पहाड़ हैं ना ढलान से पानी नीचे आकर नाले में जमा हो जाता है और नाला तेजी से बहने लगता है। बच्चे छोटे हैं, पैदल आते हैं, इसलिए स्कूल छोड़ देते हैं।"

"This is a hilly landscape. Water runs rapidly down the slopes into the *nalas*, which begin flowing with great force. The children are young and walk to school, so we dismiss the school early."

She added that schools were not completely closed during the monsoon, but their timings were routinely adjusted according to prevailing weather conditions.

Babita Didi similarly noted that local authorities periodically issued advisories recommending temporary school closures during periods of exceptionally heavy rainfall. She further observed that the disruptions extended to college-going youth commuting to Bareilly and Jabalpur. Even when students managed to reach college, they often arrived in wet clothes and mud-filled shoes after walking through waterlogged paths and overflowing *nalas*, making an already demanding journey physically uncomfortable. The discomfort and uncertainty associated with these journeys often led students to forgo attending classes during periods of heavy rainfall.

Floods thus temporarily disconnected villages from schools, colleges and other essential public services upon which everyday life depended.

The Rising Cost of Staying Connected

Heavy rainfall altered not only whether people could travel, but also how much it cost them to remain connected. The shortest routes to nearby markets frequently became submerged, forcing travellers to take longer routes. Auto-rickshaw fares, which ordinarily ranged between 20 and 30, increased to 50–70. These additional transport costs coincided with periods when agricultural work was frequently interrupted, reducing household incomes at precisely the moment when expenditure increased.

One participant captured the situation:

"बरसात के मौसम में काम ठप हो जाता है, जबकि खर्चे बढ़ते ही रहते हैं।"

"During the rains there is no work in our hands, while our expenses increase."

Weekly markets became central to this experience. Every Tuesday households travelled to purchase vegetables, groceries and other necessities not available through the Public Distribution System. During heavy rainfall, market access became uncertain. Families with motorcycles managed these disruptions more easily; poorer households dependent on shared transport frequently postponed market visits or purchased essential commodities locally at higher prices. Access to ration shops was similarly affected. Climate-induced mobility disruptions translated directly into economic vulnerability by increasing the cost of accessing food, transport and public services.

Working Around an Uncertain Season

Women in Bijadandi regarded the monsoon as the most physically demanding period of the year. Agricultural labour intensified, requiring prolonged periods of weeding, digging and crop management under wet conditions. Domestic responsibilities

continued alongside agricultural work, leaving little opportunity for rest.

Respondents also recognised that environmental change extended beyond cultivated fields. Women recalled collecting wild fruits that had gradually disappeared over the years. Babita Didi remarked that many fruits once gathered during childhood were no longer available. Goat rearing had declined because grazing had become progressively more difficult, while cattle continued to depend upon forests and common lands for fodder. Respondents noted increasing soil erosion across surrounding slopes and changes in vegetation associated with the changing behaviour of rainfall.

The narratives emerging from Bijadandi portray a landscape where climate is experienced primarily through interruption rather than direct exposure. Respondents recognised that summers had become warmer, but their dominant concern centred on an increasingly unpredictable monsoon that repeatedly disrupted movement, education, market access and rural livelihoods. Climatic vulnerability in Bijadandi lies not simply in changing rainfall patterns, but in the cascading social and economic consequences that unfold when mobility, connectivity and everyday routines become progressively more dependent on an erratic monsoon.

3.4 Reading Across Two Landscapes

At first glance, Rajpur and Bijadandi appear to narrate two different climatic realities. Conversations in Rajpur repeatedly returned to summer, rising temperatures and the physical experience of working under extreme heat. In Bijadandi, respondents more often described changing rainfall, flash floods, damaged roads and uncertainty surrounding agricultural seasons.

A closer reading reveals considerable convergence beneath these differences. Across both landscapes,

respondents consistently described increasing difficulty in organising livelihoods around seasonal cycles that had previously been more predictable. Whether expressed through rising temperatures or changing rainfall, climatic variability was experienced less as a sequence of isolated hazards than as an erosion of environmental reliability. The concern was not simply that summers had become hotter or that rainfall had become erratic, but that familiar relationships between seasons, work, water and livelihoods no longer behaved as expected.

This shared uncertainty was particularly visible in the organisation of everyday labour. In Rajpur, the working day contracted around the thermal limits imposed by increasingly hot afternoons. In Bijadandi, agricultural work continued throughout the monsoon but became highly dependent upon highly variable rainfall. In both landscapes, work was being reorganised around climatic conditions that respondents perceived as becoming progressively less predictable.

Climatic change rarely affected one livelihood activity in isolation. Agricultural work was consistently discussed alongside livestock care, household responsibilities, water access and local mobility. Respondents moved effortlessly between these domains because, in everyday life, they are inseparable. Climatic stress appeared as an interconnected experience rather than a collection of independent sectoral problems.

Respondents seldom explained changing climatic conditions through abstract discussions of global climate change. Instead, they interpreted environmental change through transformations that were immediately visible within their surroundings. In Rajpur, increasing heat was associated with declining tree cover, expansion of cultivated land and intensive groundwater extraction. In Bijadandi, discussions centred on disappearing forest resources, changing stream behaviour, increasing soil erosion and altered rainfall patterns. Climatic change and landscape transformation were perceived as mutually reinforcing processes.

Despite describing profound changes, respondents rarely portrayed these changes as extraordinary events. Altered working hours, interrupted sleep, increased livestock care, changing cropping practices and adjustments in household routines were discussed as ordinary features of village life. Adaptation was embedded within countless small adjustments through which households attempted to maintain continuity despite increasingly uncertain environmental conditions.

The comparison highlights the importance of moving beyond hazard-centred approaches. If Rajpur is understood only through the lens of heatwaves, and Bijadandi only through floods or erratic rainfall, much of the lived experience remains invisible. Climatic stress is experienced through the interaction of multiple environmental processes that unfold simultaneously across agriculture, water, ecosystems, livelihoods and social relations.

Climate change is experienced through the disruption of everyday systems rather than through individual weather events. Respondents rarely remembered specific heatwaves or floods in isolation. Instead, they recalled

changing routines, altered landscapes, declining environmental resources and an increasing uncertainty about the future. Ultimately, what has changed most fundamentally is not merely the intensity of individual climatic events, but the reliability of the ecological and seasonal relationships upon which rural life has historically depended.

The empirical evidence presented across Rajpur and Bijadandi therefore points towards a broader understanding of rural climate vulnerability. While the immediate manifestations differ between landscapes, the underlying processes exhibit remarkable consistency. Climatic change reshapes livelihoods not only by exposing households to environmental hazards, but by progressively altering the ecological systems, seasonal rhythms and everyday practices through which rural communities organise their lives.

The following chapter builds upon these empirical observations to argue that these apparently distinct experiences are better understood as interconnected manifestations of a broader process of systemic climatic stress.

Climate change is experienced through the disruption of everyday systems rather than through individual weather events. Respondents rarely remembered specific heatwaves or floods in isolation. Instead, they recalled changing routines, altered landscapes, declining environmental resources and an increasing uncertainty about the future. Ultimately, what has changed most fundamentally is not merely the intensity of individual climatic events, but the reliability of the ecological and seasonal relationships upon which rural life has historically depended.



04

Expressions of Systemic Heat

4.1 Beyond Temperature

The findings presented in the previous chapter demonstrate that climate change is no longer experienced as a series of isolated weather events. Across both Rajpur and Bijadandi, respondents described longer dry spells, declining soil moisture, changing rainfall patterns, harsher summers, increasing water scarcity, drying forests, changing agricultural practices and shifting daily routines. Viewed individually, these observations appear as distinct environmental concerns. Considered together, they reveal a more fundamental transformation: the gradual reorganisation of the

socio-ecological systems upon which rural life depends.

This chapter argues that the interconnected transformations observed across the two study landscapes are best understood as expressions of **Systemic Heat**. Rather than being reflected solely in rising temperatures, Systemic Heat manifests through changing hydrological processes, ecological relationships, livelihood systems and everyday patterns of work and decision-making. Communities are therefore responding not simply to a warmer climate, but to an environment whose underlying ecological and social relationships are progressively being reorganised by persistent warming.

Explainer Box 4.1: Understanding Systemic Heat

The term Systemic Heat has gained increasing prominence in recent years as a way of describing the pervasive and interconnected nature of warming. In this report, it is understood as the condition that emerges when persistent warming becomes embedded within the functioning of interconnected ecological and social systems.

To understand this idea, it is useful to begin with the concept of a system. A system is generally understood as a set of interconnected elements that influence one another, such that changes in one component affect the functioning of others. In the context of climate change, these elements include the atmosphere, water, soils, vegetation, ecosystems and human societies. Because these components are interconnected, changes in one part of the system propagate through others.

Global warming is increasing the amount of heat retained within the Earth's climate **system**. Most of this excess heat is absorbed by the oceans, which influence atmospheric circulation and monsoon behaviour through the continuous exchange of heat and moisture with the atmosphere. At the same time, warmer land surfaces accelerate evaporation, reducing soil moisture and increasing water stress. Together, these processes alter the movement of water and energy through ecological and hydrological systems. Although these changes occur globally and not uniformly, their consequences are experienced differently across landscapes depending on local ecological conditions, livelihood practices and social contexts.

Systemic Heat therefore refers not simply to higher temperatures, but to the way persistent warming progressively reshapes the relationships between climate, water, ecosystems and society. Heat is no longer experienced merely as hotter days or isolated heatwaves; instead, it becomes embedded within the normal functioning of the system itself, influencing water availability, ecological processes, agricultural productivity, livelihoods and human well-being in interconnected ways.)

These expressions are neither uniform nor identical across landscapes. The pathways through which Systemic Heat manifests depend upon local ecological conditions, livelihood systems and existing vulnerabilities. Rajpur and Bijadandi do not experience the same climatic transformations. Instead, each landscape reveals different expressions of a common systemic process. Recognising these differences shifts attention away from individual climatic indicators towards understanding how persistent warming reshapes the relationships between ecosystems, livelihoods and society.

This perspective challenges conventional approaches to climate impacts. Heatwaves, droughts and erratic rainfall are often analysed as separate hazards, with adaptation strategies designed for each in isolation. The field evidence suggests that such distinctions are becoming increasingly inadequate. Ecological processes do not respond independently to climatic stress. Changes in rainfall influence soil moisture; declining soil moisture affects agricultural productivity; reduced productivity alters labour allocation, household decisions and livelihood security. Climate change therefore operates less as a sequence of independent shocks than as a process that progressively reorganises interconnected systems.

Systemic Heat should be recognised not through any single climatic indicator but through these changing relationships. Its presence becomes visible when persistent warming begins to alter the ecological and social systems that sustain everyday life. The following sections examine these expressions across the two study landscapes.

4.2 Ecological Change

One of the clearest expressions of Systemic Heat emerging from the field evidence is the gradual reorganisation of ecological processes. While observations such as changing rainfall behaviour, declining soil moisture, or drying streams may

initially appear as independent environmental changes, their analytical significance lies in how they occur simultaneously and reinforce one another. Together, they indicate that persistent warming is altering the functioning of the landscape rather than simply influencing seasonal weather.

This interpretation is consistent with a growing body of scholarship that argues for understanding heat through its interconnected consequences rather than as an isolated climatic phenomenon. Reflecting on India's warming trajectory, Peter Huybers observes in *Critical Perspectives on Extreme Heat in India* that "this trend matters not just because averages are rising, but because heat extremes are increasing in frequency and becoming more consequential for health, labour, infrastructure, and food systems." Likewise, Satchit Balsari argues that rising temperatures generate "intersecting forms of exposure" that affect "not only labour productivity but also health, habitability, and economic stability." Building on this systems perspective, the present study extends the analysis to rural socio-ecological landscapes by demonstrating how persistent warming reorganises ecological processes through interacting changes in rainfall, soil moisture, surface water availability and vegetation dynamics.

The observations from Bijadandi illustrate this process particularly well. Environmental change is experienced less through extreme heat itself than through shifts in ecological rhythms. Longer dry spells interrupt the continuity between rainfall events, exposing agricultural soils to prolonged moisture stress and weakening the processes that regulate groundwater recharge, vegetation growth and rain-fed agriculture. The landscape is becoming gradually incapable of buffering against climatic variability.

Rainfall, soil moisture, vegetation and agricultural productivity are often treated as separate variables. The experiences documented in Bijadandi suggest that rural communities experience them as parts of the same ecological system. Changing rainfall is simultaneously experienced as changing soils,

declining agricultural reliability, drying forests and increasing pressure on water resources. Persistent warming becomes embedded within ecological functioning rather than remaining confined to atmospheric temperature.

Rajpur reveals the same systemic process through a different ecological pathway. Here, the defining feature is the interaction between persistent heat, chronic water scarcity and landscape degradation. Higher temperatures accelerate evaporation and intensify pressure on already limited water resources. Water scarcity, in turn, reduces the resilience of agricultural systems to subsequent periods of heat, reinforcing ecological degradation. Heat and water scarcity become mutually reinforcing processes.

The two landscapes demonstrate that **Systemic Heat** does not produce identical ecological outcomes. It reorganises ecological systems according to the characteristics of particular landscapes. In Bijadandi, this reorganisation is expressed primarily through altered hydrological rhythms and declining environmental moisture. In Rajpur, it is expressed through the interaction between persistent heat, water scarcity and ecological degradation. The pathways differ, yet both reveal the same underlying process: persistent warming is progressively reshaping the functioning of socio-ecological systems.

Ecological reorganisation represents the first expression of Systemic Heat. As ecological systems become less reliable, households are far more required to reorganise how they plan work, allocate resources and respond to uncertainty. The consequences of Systemic Heat therefore begin not only in the landscape but in the decisions through which everyday life is organised.

4.3 Constrained Agency

The ecological transformations described above reshape more than environmental conditions;

they alter the circumstances within which rural households make everyday decisions. While communities continue to exercise agency, the range of viable choices available to them is progressively narrowed. The choices of working during afternoons or during monsoon days, choices of accessing markets, schools or visiting places of livelihoods become limited, under given situations. Systemic Heat does not eliminate agency; it constrains the conditions within which it can be meaningfully exercised.

In relatively stable environmental systems, households draw upon accumulated ecological knowledge to make decisions regarding sowing, irrigation, labour allocation, livestock management and the timing of seasonal activities. These decisions depend upon an expectation that seasonal patterns remain sufficiently reliable to support planning. The field evidence suggests that this reliability is progressively being undermined. Longer dry spells, changing monsoon behaviour, declining soil moisture and persistent heat reduce confidence in previously established patterns.

The significance of this uncertainty lies in the shrinking range of adaptive options. Specific choices that have narrowed include the hours during which outdoor labour remains feasible (Rajpur); the routes and timing of market and school travel (Bijadandi); decisions about whether to operate coolers given the labour cost of water; cropping choices constrained by unreliable residual soil moisture; and the allocation of women's time between competing demands of agriculture, water, fuelwood and care. Adjustments that once represented strategic choices become reactive responses to environmental uncertainty.

Although the pathways differ, the underlying process remains the same. In Bijadandi, uncertainty surrounding rainfall timing and soil moisture complicates agricultural planning. In Rajpur, persistent heat and chronic water scarcity restrict livelihood options and increase dependence on already stressed natural resources. In both cases,

environmental instability progressively reduces the capacity of households to anticipate, plan and respond with confidence.

Constrained agency should not be interpreted as an absence of resilience or initiative. Rural households continue to demonstrate ingenuity—shifting work hours, adjusting routes, redistributing household tasks, and modifying cropping where residual moisture allows. Yet these adaptive efforts increasingly occur within ecological systems that provide fewer opportunities for successful adjustment. Adaptation becomes more demanding, requiring continual revision of everyday decisions simply to sustain existing livelihoods rather than improve them.

Systemic Heat reshapes vulnerability not only through its ecological effects but by progressively limiting the flexibility with which households can respond to them. As the space for adaptive decision-making contracts, maintaining everyday life demands increasing effort. It is this intensification of

routine adaptation that gives rise to another defining expression of Systemic Heat: the growing burden of hidden labour.

4.4 Hidden Labour

One of the less visible consequences of Systemic Heat is the intensification of labour required to sustain everyday life. Hidden labour is used here to describe the additional time, effort and work that persistent climatic stress imposes on rural households, increasing the labour required simply to maintain livelihoods and household routines that previously demanded considerably less effort. As ecological systems become less reliable and adaptive choices narrow, households increasingly compensate through this expanding labour burden merely to preserve existing living conditions rather than improve them. Adaptation, in this sense, is not an occasional response to climatic shocks but an everyday practice embedded within routine life



This hidden labour extends across multiple aspects of rural livelihoods. Securing water often requires greater effort, agricultural activities demand continual adjustment to uncertain weather, livestock require additional care during periods of heat and water scarcity, and household routines are reorganised around changing environmental conditions. Individually, these adjustments may appear routine; collectively, they represent the growing human effort required to compensate for declining ecological reliability.

This burden is not distributed evenly. Existing gendered divisions of labour mean that women frequently absorb a disproportionate share of the additional responsibilities associated with managing water, livestock, household work and agriculture. Systemic Heat does not create these inequalities; it intensifies labour within already unequal social arrangements, adapting itself a gendered process.

The significance of hidden labour lies not only in the effort it demands but also in what it displaces. Time devoted to managing environmental uncertainty is time unavailable for education, income generation, community participation or rest. Adaptation therefore carries an often invisible opportunity cost. What appears as resilience frequently depends upon increasing labour, reduced flexibility and the gradual depletion of household resources. Hidden labour

reveals that the costs of climate change are borne not only through environmental losses but through the everyday work required to sustain rural life.

4.5 Interconnected Systems

The preceding sections have shown that Systemic Heat is expressed through ecological reorganisation, constrained agency and the intensification of hidden labour. These[MB3.1] are not independent consequences; they are interconnected processes through which environmental change spreads across the rural socio-ecological system. The significance of Systemic Heat lies less in any single climatic stress than in its capacity to reshape the relationships between ecological, social and economic systems.

Viewing climate change through interconnected systems also changes how vulnerability is understood. Vulnerability does not arise from a single climatic event, but from the interaction between changing ecological conditions and progressively constrained social responses. As adaptive choices narrow and the hidden costs of maintaining everyday life accumulate, households become far more susceptible to multiple, reinforcing stresses.

The following chapter turns to this question directly, tracing how these pressures travel across everyday life as cascading impacts.

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Life Sketch



**Babita
Bijadandi, Mandla**

When the Rain Changed Its Rhythm



"पहले बारिश धीरे-धीरे गिरती थी। बाद में बढ़ती थी। अब अचानक शुरू होती है, और बूंदें भी बड़ी और भारी हो गई हैं।"

"Earlier, the rain arrived gently and gradually gathered strength. Now it begins suddenly, and the raindrops themselves have become larger and heavier."

Among the women gathered for the discussion in Jamuniya village of Bijadandi Block, in the Mandla District, Babita's observations carried an unusual quality. She rarely described climate through numbers or seasons. Instead, she described it through memory—through the changing rhythm, sound and texture of rainfall.

As a child, the arrival of the monsoon was an event to be celebrated. Children watched swollen streams with excitement, comparing them playfully to the famous waterfalls of Bhedaghat. Rainfall stretched over weeks, arriving softly before gradually becoming heavier. Today, she says, that rhythm has disappeared. Long dry spells are interrupted by sudden cloudbursts. The raindrops themselves feel larger and heavier. Crops that once withstood the rains now suffer physical damage. Maize leaves tear under the impact of intense rainfall. Soil erodes more rapidly, pests have become more common, and even the taste and quality of traditional crops have changed. Forest fruits once gathered during summer have become increasingly scarce.

Jamuniya does not face the severe summer water scarcity seen elsewhere in Madhya Pradesh. Instead, it experiences the opposite challenge. Surrounded by undulating terrain, streams swell rapidly during intense rainfall as water rushes down surrounding slopes. Roads become impassable, schools close early, markets become inaccessible and ordinary mobility comes to a halt. Babita explains that weather advisories frequently result in precautionary school closures because children cannot safely cross flooded streams. Here, excess water rather than its absence governs everyday life.

Yet the story extends far beyond flooding. Babita speaks about work with equal clarity. Farming on one's own land offers a degree of flexibility. Wage labour does not. Those employed by contractors cannot simply rest because temperatures are high or rainfall has disrupted travel. Arriving late results in wage deductions. Missing work means losing income altogether. Environmental uncertainty therefore becomes economic uncertainty, particularly for households dependent on daily wages.

The changing monsoon also reshapes access to essential services. Weekly markets become difficult to reach, transport fares increase sharply, and families without private vehicles spend significantly more merely to purchase food. Public distribution shops continue functioning, but flooded roads often make reaching them impossible. During the very months when wage opportunities decline, household expenditure rises because travel itself becomes expensive. As Babita explains, the problem is not only rain—it is everything that rain prevents people from doing.

Throughout the discussion, Babita returned repeatedly to one theme: uncertainty. Rain no longer behaves as it once did. Streams rise more suddenly. Roads become unreliable. Agricultural decisions are harder to make. Even familiar landscapes feel less predictable than before. Her account is not one of dramatic disaster but of a season whose behaviour has become incrementally difficult to anticipate.

In Babita's story, climate change is heard in the sound of heavier raindrops, seen in damaged maize leaves, and felt in the long wait for floodwaters to recede before life can begin moving again. Her memories remind us that environmental change is not experienced only through extremes. Sometimes it is recognised simply because the seasons no longer arrive in the way people have known them all their lives.



**Ramesh
Sakhi Banskar
Barela, Jabalpur**

Crafting Bamboo in a Warming World



बढ़ती धूप के कारण बाँस काटना भी बड़ी दिक्कत हो जाती है। बढ़ती गर्मी की वजह से बाँस की नमी बहुत कम हो जाती है। बाँस जल्दी टूट जाता है।

"The stronger sun has made even cutting bamboo difficult. As temperatures rise, bamboo loses much of its natural moisture. It dries too quickly, snaps easily, and becomes difficult to shape into finished products."

For Ramesh Prasad and Sakhi Banskar, bamboo is far more than a raw material. It is a family inheritance carried across generations. Living in Barela on the outskirts of Jabalpur, the couple belongs to a community of traditional bamboo artisans who learnt the craft from their parents and grandparents before refining their skills through formal training at the Laghu Udyog Kendra in Jabalpur. Today, they weave baskets, winnowing trays (supa), and a range of household artefacts using bamboo procured from Balaghat and, at times, from Assam through local traders.

To an outsider, bamboo appears rigid and lifeless. To Ramesh, however, it is a living material whose character changes with moisture, sunlight and time. Before it can be woven, bamboo must first be soaked, split and carefully prepared. Too little moisture and it becomes brittle. Too much moisture invites fungus. The artisan's skill lies in working with bamboo at precisely the right moment.

It is here that the changing climate has quietly entered his workshop.

Ramesh explains that the increasing intensity of summer heat dries bamboo much faster than before. What once remained supple long enough to be shaped now loses its moisture quickly, making it prone to cracking even in experienced hands. For an artisan, every snapped strip is more than wasted material—it represents lost labour, lost income and the frustration of watching years of accumulated skill struggle against conditions that continue to change.

Water, too, has become part of this story. Earlier, freshly cut bamboo was soaked overnight in the village pond before weaving began. The pond no longer exists. In its place stands a community structure. The work has therefore moved into the household itself. Sakhi now soaks bamboo beneath the household tap whenever municipal water is available for the brief morning supply. If electricity fails, water does not arrive. During periods of shortage, tanker water supplied by the Nagar Parishad becomes the only option, adding another expense to an occupation already under pressure. She smiles while pointing out that tap water keeps the bamboo cleaner than muddy pond water ever did, but beneath that observation lies a larger transformation—the disappearance of a shared ecological resource that once quietly supported their livelihood.

Summer is also the busiest season for bamboo artisans. Weddings create a surge in demand for baskets and ceremonial items. Ironically, the very season that brings higher sales also makes production and marketing most difficult. Weaving bamboo requires patience and physical effort. Selling the finished products means standing for hours in open weekly markets under an unforgiving sun. During particularly hot spells, production slows to such an extent that Ramesh occasionally purchases finished products from other artisans simply to fulfil customer demand. The market does not wait for the weather.

Their livelihood is changing in other ways as well. Plastic has steadily replaced handmade bamboo products in everyday life, reducing demand for a craft that requires considerable skill but yields diminishing returns. Climate change therefore arrives alongside broader economic transitions. Heat affects the material they work with; disappearing ponds alter production practices; shrinking markets undermine income. None of these changes occurs in isolation. Together, they reshape the everyday conditions under which a traditional craft survives.

Listening to Ramesh and Sakhi, one begins to understand that climate change is not experienced only in fields and forests. It is also felt in the texture of bamboo, the absence of a village pond, the exhaustion of standing in a summer market, and the quiet adjustments required to keep an inherited craft alive. Their story reminds us that environmental change does not merely transform landscapes—it also transforms the materials, skills and livelihoods through which people make a living.

The experience of Ramesh and Sakhi Banskar, bamboo artisans in Bareilly, extends the analysis of Systemic Heat beyond agriculture. Their account shows how rising temperatures alter the material itself, transform access to common resources, and intensify the physical demands of production and marketing—demonstrating that cascading pressures operate across diverse rural livelihoods.



05

Cascading Impacts: When
Environmental Change Travels Across
Everyday Life

5.1 From Everyday Decisions to Cascading Impacts

The previous chapter argued that climatic change is increasingly shaping the practical decisions through which rural households organise work, mobility, livelihoods and care. Across Rajpur and Bijadandi, respondents described making these decisions within environmental conditions that had become less predictable and less negotiable. While these constraints first appeared in specific aspects of everyday life, they rarely remained confined there.

This chapter examines how the consequences of those constrained decisions travel across rural systems through the concept of **cascading impacts**: situations in which a change in one aspect of everyday life reshapes other activities, relationships and decisions in turn. Cascading impacts are not fixed chains of cause and effect, nor do they refer merely to multiple effects occurring at once. Rather, they are relational pathways through which climatic change propagates across livelihoods, household organisation, health and ecological conditions — pathways that differ across households and landscapes, but that share a common principle: climatic disturbances rarely remain confined to the domain in which they originate.

Although respondents rarely narrated these cascades explicitly, they became increasingly more visible through comparative interpretation of interviews and field observations from Rajpur and Bijadandi. The following sections trace these pathways through labour, water, the household, health and ecological change

5.2 Labour Rarely Changes Alone

Chapter 3 demonstrated that increasing summer temperatures had altered the organisation of

work in Rajpur. Participants described beginning work earlier, avoiding strenuous labour during the afternoon and adjusting daily routines around thermal conditions. The analytical significance of these observations, however, extends beyond labour itself.

Reduced working hours affected household income among families dependent upon daily wages. Agricultural operations became compressed into shorter periods of the day, increasing competition between farming, livestock care and domestic responsibilities. Time saved in one activity frequently generated additional demands elsewhere.

The field material therefore suggests that labour functions as one entry point through which climatic change travels across household economies. Increasingly, the organisation and timing of work reflect the changing rhythms of climate rather than solely the demands of production, illustrating that labour cannot be understood independently of the wider socio-ecological systems within which it is embedded.

5.3 Water Connects Rural Life

Water emerged from the field material not simply as a resource affected by climatic change, but as a medium connecting multiple dimensions of rural life. Across both landscapes, discussions that began around water quickly expanded to encompass livelihoods, household work, mobility, food production and coping with heat. Rather than functioning as one sector among many, water emerged as one of the principal pathways through which **Systemic Heat** propagated across interconnected rural systems.

The experiences of Ramesh and Sakhi Banskar illustrate this particularly well. As their life sketch shows, rising temperatures caused bamboo to dry more rapidly, increasing the need to soak it before weaving. Yet, the same summer conditions

made water increasingly scarce and expensive. Heat therefore affected bamboo livelihoods in two interconnected ways: it increased dependence on water while simultaneously making access to that water more difficult. What appears as a technical challenge in bamboo weaving is, in reality, an interaction between heat, water and livelihoods.

The wider field evidence reveals a similar pattern. Respondents consistently described not only declining **availability** of water through drying sources and prolonged dry periods, but also diminishing **access** to water as extreme heat made fetching and carrying it increasingly strenuous. Women in Upla explained that although some households owned desert coolers, they often chose not to use them because collecting the additional water required under scorching summer conditions was simply not worth the effort. Likewise, water scarcity reduced the viability of Poshan Vatikas, while periods of extreme heat made accessing the Public Distribution System more physically demanding. In Bijadandi, changing stream behaviour simultaneously affected mobility, schooling and access to work. These were not isolated water-related impacts, but interconnected expressions of changing hydrological conditions.

Water therefore functions not merely as a climate-sensitive resource, but as one of the principal pathways through which **Systemic Heat** reorganises rural life. As changing rainfall reshapes water availability and access, its effects cascade simultaneously across livelihoods, mobility, household life and people's capacity to adapt.

5.4 The Household as the Point Where Cascades Converge

Although cascading impacts originated through different environmental pathways, they frequently became most visible within the household.

Across both study areas, respondents described balancing agricultural work, livestock care, water management and domestic responsibilities within progressively uncertain environmental conditions. Adjustments made in one sphere inevitably required corresponding adjustments elsewhere.

Women occupied a particularly important position within these negotiations. Their narratives demonstrated that household organisation often became the mechanism through which climatic pressures were absorbed. Additional time required for water collection, altered cooking schedules and the coordination of agricultural and domestic work were not independent responses but interconnected consequences of wider environmental change.

This observation should not be interpreted simply as evidence of women's resilience. Rather, it indicates that households often manage cascading impacts by redistributing labour internally, with women carrying a disproportionate share of these additional responsibilities.

5.5 Health as a Relational Outcome

The field narratives showed that respondents frequently spoke about bodily discomfort while describing changing climatic conditions. Experiences such as 'घबराहट', disturbed sleep, headaches, physical exhaustion and declining stamina were not narrated as isolated health problems, but as part of the broader challenges of living and working through increasingly hot summers.

Health therefore rarely emerged during interviews as an independent concern. Respondents seldom framed these experiences in terms of illness or disease. Instead, they described them as an inevitable consequence of carrying out everyday work under increasingly hotter conditions.

However, respondents rarely attributed these experiences to rising temperatures alone. Rather, they explained how the demands of everyday life left them with little choice but to continue working despite the heat. Agricultural work could not be postponed, water still had to be collected, livestock had to be cared for, and household responsibilities remained unchanged. It was this prolonged and often unavoidable exposure to heat, rather than heat alone, that respondents associated with declining physical well-being.

Negative impacts on health therefore emerged not simply from heat itself, but from people's limited ability to avoid prolonged exposure to it. Livelihoods, household responsibilities and environmental conditions together shaped both the duration of heat exposure and its consequences for bodily well-being. Poor sleep reduced physical endurance, while fatigue affected productivity, household income and the ability to carry out everyday responsibilities. Health was therefore closely intertwined with the changing conditions of work, livelihoods and household life.

The field evidence suggests that the health consequences of climatic change cannot be understood solely through rising temperatures or medical symptoms. They are produced through the interaction of heat with livelihoods, labour and household responsibilities, making health an outcome of the changing conditions under which rural life is lived.

5.6 Ecological Change and the Loss of Predictability

Respondents in Bijadandi repeatedly referred to changing forests, altered rainfall patterns and declining reliability of streams. These observations point towards another important dimension of cascading impacts.

Environmental change affects not only ecological conditions but also the predictability upon which rural decision-making depends. Agricultural planning, livestock management, forest collection and household organisation all rely upon expectations regarding seasonal behaviour. When those expectations become increasingly uncertain, households must make decisions under conditions of greater ambiguity.

The field therefore suggests that uncertainty itself becomes a pathway through which climatic change influences multiple aspects of rural life.

5.7 Cascades Are Relational

The pathways described in this chapter should not be interpreted as fixed sequences of cause and effect. In practice, labour influences health; health shapes productivity; productivity affects household organisation; household organisation alters water use; and water availability reshapes livelihoods. Different pathways become more prominent under different environmental conditions, but none operates independently of the others.

Taken together, these pathways suggest that climatic change is experienced less as a series of isolated impacts than as a process that continually reorganises the relationships between labour, water, health, households and ecological systems. Cascading impacts therefore represent not simply multiple consequences of environmental change, but the mechanisms through which Systemic Heat propagates across interconnected rural systems. Understanding these interconnections requires moving beyond sectoral analyses of climate vulnerability towards a relational understanding of how environmental change travels through everyday rural life.

This perspective also raises an important question. If these cascading impacts recur across successive seasons, what are their longer-term implications for the households and communities that experience them? Whether repeated

cascades merely accumulate or produce more fundamental changes in vulnerability remains an open question. The following chapter examines this question through the concept of **Cumulative Vulnerability**.

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06

Systemic Heat and the Production of Cumulative Vulnerability

The preceding chapters established that climatic change is experienced through interconnected ecological and social processes rather than isolated hazards. They also demonstrated how these processes propagate across labour, water, households, health and ecological systems through cascading impacts. What remains is to understand the longer-term implications of repeatedly living with these impacts.

6.1 From Cascading Impacts to Cumulative Processes

Cascading impacts explain how climatic stress moves across interconnected aspects of rural life, but they do not fully explain what repeated exposure to those cascades does over time.

The field material suggests that each season requires practical adjustments that enable everyday life to continue. Yet these adjustments draw upon time, labour, health and social resources that are not endlessly renewable. Over time, repeated responses to climatic stress progressively reshape the capacity through which households respond to subsequent climatic pressures. Understanding this temporal dynamic requires moving beyond cascading impacts towards recognising the self-reinforcing processes through which vulnerability is reproduced.

This chapter develops two analytical concepts emerging from the field material. The first is **Systemic Heat**, which understands persistent warming as a continuous force interacting with ecological and social systems rather than as an episodic hazard. The second is **Cumulative Vulnerability**, which describes the gradual erosion of household capacity as climatic stress is repeatedly absorbed through everyday life. Together, these concepts explain vulnerability not simply as exposure to environmental risk, but as a process reproduced over time.

6.2 Systemic Heat as a Relational Process

The first concept, **Systemic Heat**, builds upon a recurring observation from the field material: respondents rarely understood environmental change through separate climatic events or sectoral impacts. Instead, heat, rainfall, forests, water and work were consistently narrated as interconnected relationships, suggesting that climatic change was experienced through the disruption of everyday systems rather than through individual weather events.

The concept of Systemic Heat captures this relational character. It understands persistent warming as a continuous condition embedded within the ecological and social systems that organise rural life. Heat therefore does not simply create an additional environmental stress; it interacts with rainfall regimes, water availability, vegetation, labour practices and household organisation to produce consequences that cannot be understood through any single sector.

Its expression differs across landscapes. In Rajpur, Systemic Heat is experienced primarily through prolonged summers and direct thermal exposure. In Bijadandi, it is mediated more strongly through hydro-ecological processes, including altered monsoon behaviour, rapid runoff, soil erosion and changing forest conditions. Although these pathways differ, they reveal the same underlying process: the gradual disruption of the ecological relationships upon which everyday rural life depends.

Understanding Systemic Heat in this way shifts attention away from individual climatic events towards the changing ecological and social conditions within which rural life is organised. It therefore provides a relational understanding of climatic change that extends beyond conventional event-based interpretations of extreme heat.

6.3 The Production of Cumulative Vulnerability

Cumulative Vulnerability refers to the gradual erosion of household capacity as repeated climatic stresses are absorbed through everyday life. Whereas vulnerability is often understood in relation to exposure to climatic hazards, cumulative vulnerability draws attention to the processes through which successive adjustments to climatic stress progressively reshape households' capacity to respond to future stresses. The field material suggests that this occurs not through a simple accumulation of impacts, but through a process of reinforcement. Each season requires practical adjustments that enable everyday life to continue. Yet these adjustments draw upon time, health, physical energy, care work and social support that are not endlessly renewable. As similar adjustments are repeated across successive seasons, they progressively reshape the conditions under which households experience and respond to future climatic stress. Vulnerability therefore develops through recurring spirals in which each cycle influences the next rather than through a simple linear accumulation of impacts.

Three reinforcing processes are particularly evident.

First, the erosion of physical recovery.

Respondents in Rajpur described beginning work earlier, reducing afternoon labour and enduring increasingly warm nights. These adjustments enabled livelihoods to continue but simultaneously reduced opportunities for rest and recovery. Fatigue, headaches and reduced physical endurance became ordinary features of summer. Over time, diminished recovery reduced work capacity, increasing pressure on household labour organisation during subsequent periods of climatic stress.

Second, the concentration of climatic

burdens within unpaid care work. Across both landscapes, households responded to changing environmental conditions primarily by redistributing work internally. Women repeatedly described adjusting water collection, cooking, childcare, livestock care and agricultural labour to maintain household continuity. Much of this additional work remained invisible because it was expressed through time, care and emotional labour rather than wage employment. Climatic stress was therefore absorbed disproportionately through unpaid household work, allowing everyday life to continue while simultaneously increasing the long-term burdens carried by those responsible for sustaining it.

Third, the narrowing of practical agency.

As environmental conditions became less predictable, households exercised progressively less freedom over the organisation of work, mobility and livelihoods. In Rajpur, thermal conditions increasingly determined when labour could occur. In Bijadandi, rainfall dictated the viability of travel, schooling and market access. Households continued to make decisions, but within a progressively narrower range of possibilities. Vulnerability therefore increased not because agency disappeared, but because the space within which meaningful choices could be exercised steadily contracted.

These processes are mutually reinforcing rather than sequential. Reduced recovery constrains labour capacity; constrained labour capacity increases dependence on unpaid care work; expanding care responsibilities further reduce opportunities for rest and recovery, initiating the cycle once again. Cumulative vulnerability therefore emerges not through any single climatic event, but through the repeated interaction of these reinforcing processes across successive seasons.

Critically, the cost of these adjustments does not remain constant—it compounds. At first, households typically absorb climatic stress by drawing upon genuine slack: an extra hour in the day, spare physical energy or another family member able to share the workload. As similar adjustments are repeated season after season, these reserves are progressively exhausted. The same responses must then be financed through increasingly difficult trade-offs involving sleep, health, children's education or income-generating opportunities. What begins as a small and often invisible adjustment gradually becomes more costly to sustain, even where the climatic stress itself has not substantially intensified.

6.4 Coping Is Not the Same as Building Resilience

A significant implication follows from this analysis.

Much contemporary adaptation discourse interprets household-level adjustments as evidence of resilience. The field material encourages a more cautious reading.

The adjustments documented in this study—earlier working hours, intensified household labour, altered mobility strategies and increasing dependence on remaining environmental resources—are indispensable for sustaining everyday life. Yet they do not necessarily strengthen the capacity to absorb future climatic stress. On the contrary, they frequently depend upon drawing more heavily upon finite resources such as physical health, unpaid labour, time and social energy.

Recognising this distinction is important because it shifts attention away from the existence of coping practices towards the conditions under which those practices occur. Survival should not automatically be interpreted as resilience. Households may continue functioning while

simultaneously experiencing a gradual erosion of the resources that make future coping possible. In many cases, coping enables households to withstand immediate climatic stress while simultaneously contributing to the longer-term spirals through which vulnerability is reproduced.

This distinction has important implications for climate policy. Programmes that celebrate local adaptation without recognising its cumulative social costs risk mistaking necessary survival strategies for evidence of strengthened resilience.

6.5 Cumulative Vulnerability Across Contrasting Landscapes

The comparative analysis demonstrates that cumulative vulnerability is not determined solely by the intensity of climatic exposure.

Rajpur and Bijadandi differ substantially in their ecological conditions and the dominant forms through which climatic change is experienced. Yet both landscapes reveal comparable processes through which vulnerability is reproduced.

In Rajpur, cumulative vulnerability is driven primarily by prolonged thermal exposure and the progressive erosion of physical recovery. In Bijadandi, it emerges more strongly through hydro-ecological disruption, repeated interruptions to mobility and increasing environmental uncertainty. Despite these differences, households in both locations respond primarily through internal adjustments that sustain everyday life while increasing the burdens carried by particular members, especially women.

The comparison therefore suggests that cumulative vulnerability arises less from specific climatic hazards than from the interaction between climatic processes and the social organisation of labour, care, recovery and decision-making.

6.6 Towards an Integrated Understanding

Read together, Systemic Heat, cascading impacts and spirals of vulnerability describe a single process rather than three separate findings: a continuous climatic stress that travels across interconnected domains of rural life and, through

repetition, progressively erodes households' capacity to respond to what comes next. It is through this gradual accumulation of climatic stress and repeated adjustment over time that Cumulative Vulnerability is produced.

The following chapter turns to what this means for how rural climate vulnerability should be understood — and acted upon — going forward.

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07

Rethinking Rural Climate Action: Reflections from the Field

7.1 What the Field Ultimately Revealed

The fieldwork across Rajpur and Bijadandi ultimately suggested that **heat is experienced through far more than direct thermal exposure**. Respondents rarely understood environmental change by separating heat from rainfall, water, forests, livelihoods or household responsibilities. Instead, they described how persistent heat interacted with these interconnected systems, reshaping everyday rural life in different ways across the two landscapes.

This observation represents the central insight of the study. Heat was experienced not simply as a climatic hazard or a period of extreme weather, but as an ongoing condition whose effects travelled through ecological relationships, water systems, labour, mobility and household organisation. The significance of heat therefore lay not only in direct thermal exposure, but in the gradual reorganisation of the ecological and social systems through which rural livelihoods are sustained.

It is this understanding of **heat beyond heatwaves** that underpins the analysis presented in this report

7.2 From Climatic Events to Everyday Conditions

Because Systemic Heat operates as an ongoing condition rather than a sequence of discrete hazards, it carries a direct implication for how rural climate action is currently designed. Disaster preparedness and emergency response — while essential — are built to respond to events: a heatwave, a flood. They are not designed to address the slower, less visible conditions through which the vulnerability described in this report actually accumulates. Rural climate action must therefore expand beyond emergency response to also address the everyday, persistent processes — labour reorganisation, unpaid care work, ecological

degradation — through which this vulnerability is produced over time.

7.3 Seeing Rural Life as an Interconnected System

Another important lesson from the field is that rural life cannot be understood through isolated sectors.

Because Systemic Heat operates across interconnected domains rather than within isolated sectors, programmes designed around individual sectors — water, agriculture, health — remain necessary but are, on their own, insufficient. Responding effectively requires integrated approaches that recognise these relationships rather than treating them as separate policy challenges.

Ultimately, if heat is increasingly experienced as a systemic process rather than a series of isolated hazards, then climate adaptation must similarly evolve from responding to individual events towards strengthening the ecological and social systems through which rural life is sustained.

7.4 The Hidden Costs of Everyday Coping

The fieldwork also challenges how resilience is often understood. As Chapter 6 argued, coping is not the same as building resilience. Many of the adjustments that enable households to sustain everyday life also draw upon the very resources — time, health, unpaid labour and physical energy — that will be needed to confront future climatic stress.

This distinction has important implications for adaptation practice. The success of adaptation should not be judged simply by whether households continue functioning under increasingly difficult conditions. Rather, it should be assessed by whether interventions reduce the burdens that

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7.5 Implications for Research and Practice

Beyond the immediate policy implications, the study also raises broader questions for future climate research and adaptation practice.

First, research on rural climate risks should pay greater attention to how vulnerability develops over time. Much existing work captures exposure and sensitivity at a particular moment. The experiences documented here suggest that vulnerability is equally shaped by repeated interactions between environmental change and everyday decisions

concerning labour, care, livelihoods and recovery. Following these processes over longer periods will provide a richer understanding of how **cascading vulnerabilities** gradually contribute to **cumulative vulnerability**.

Second, the responsibility of adaptation planning sits with the institutions and they should place households at the centre of analysis and planning. Investments in water security, livelihoods, ecosystem restoration and rural infrastructure remain critical. Their effectiveness is likely to increase when they also reduce physical exhaustion, ease unpaid care work and expand the choices available to rural families as they respond to Systemic Heat.

Third, this study reaffirms the importance of qualitative inquiry. Many of the relationships described in this report became visible only through conversations, observation and lived experience. Listening carefully to how people explain environmental change reveals connections that surveys and quantitative indicators often struggle to capture. Qualitative and quantitative approaches should therefore be seen as complementary ways of understanding rural climate vulnerability.

7.6 Looking Ahead

This report is grounded in the lived experiences of households in Rajpur and Bijadandi. It does not claim to represent every rural landscape in Madhya Pradesh or India. Rather, it offers an empirically grounded understanding of how rising temperatures are experienced within everyday rural life.

Future research across different ecological regions and over longer periods will help test, refine and extend the analytical framework presented here. Comparative studies may reveal different pathways through which **Systemic Heat** is experienced and how households negotiate its effects under varying ecological and social conditions.

What already appears clear, however, is that many rural families are no longer living with persistent heat as occasional climatic disruptions. They are living with Systemic Heat—an ongoing condition that

quietly reshapes water, livelihoods, ecosystems, work and care, season after season.

Reflection

The stories of Raveti, Babita, and Ramesh and Sakhi are not illustrations of an abstract argument — they are the argument. Systemic Heat, cascading impacts and cumulative vulnerability are simply the analytical vocabulary this report uses for what their everyday lives already show: that rising temperatures are lived not as a single event, but as a condition that quietly reorganises work, water, care and livelihood, season after season.

Recognising this shifts the task ahead. It is not enough to help rural communities cope with the next heatwave or the next flood. The stronger obligation — for research and for policy alike — is to understand and interrupt the everyday, cumulative process through which vulnerability is produced in the first place.





08

**Tackling Systemic Heat through
Systemic Planning: Implications for
VB GRAM G**

Introduction

The evidence presented in this report demonstrates that rural communities experience **Systemic Heat** through interconnected ecological, infrastructural and livelihood stresses rather than through isolated climatic events. Consequently, responding to Systemic Heat requires more than individual adaptation measures; it requires a planning framework capable of simultaneously strengthening water security, ecological systems, infrastructure and rural livelihoods.

Viewed from this perspective, **VB GRAM G emerges as the institutional pivot through which Madhya Pradesh can shape climate adaptation.** This is not because VB GRAM G has been conceived as a climate programme, but because its architecture already brings together water security, rural infrastructure, livelihoods and disaster resilience through a common planning framework. When implemented through convergence, the programme provides an unprecedented opportunity to mainstream climate adaptation into rural development planning without creating parallel institutional structures.

The recommendations presented below draw upon three complementary sources of evidence:

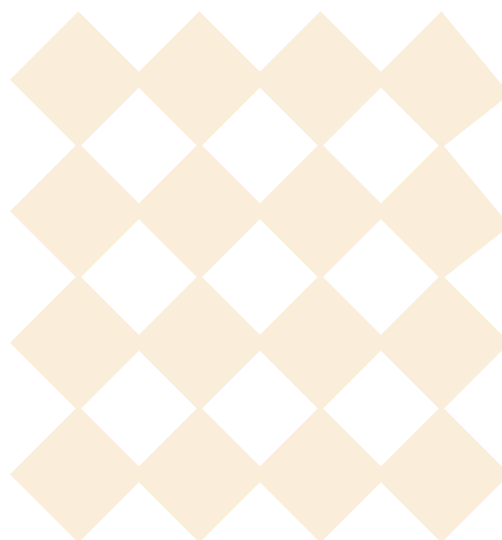
- 1 the findings of this study on **Systemic Heat**;
- 2 TRI's engagement with the Government of Madhya Pradesh under **Jal Ganga Samvardhan Abhiyan (including Mission Amrit Sarovar)**, landscape restoration and rural housing;
- 3 TRI's review of the proposed **318 permissible works** under VB GRAM G and its recommendations on the draft **Viksit Gram Panchayat Plan (VGPP).**

8.1 Strategic Direction 1

From Infrastructure Planning to Climate-Informed Planning

The Viksit Gram Panchayat Plan under the VB GRAM G holds a promise for addressing systemic heat-induced vulnerabilities at the village level. TRI recommends that every VGPP should begin with a **Gram Panchayat Climate Vulnerability Assessment**. Such an assessment should identify predominant climate hazards (including heat, drought, floods, water scarcity, and soil erosion), vulnerable habitations, climate-sensitive livelihoods, degraded ecological systems, and infrastructure at risk. This would enable Gram Panchayats to prioritise investments according to locally experienced climate risks rather than adopting a uniform planning approach.

In parallel, gap assessment should move beyond documenting the existence of public assets to evaluating their **functionality and performance**. A check dam that no longer recharges groundwater, an Amrit Sarovar that remains silted, or a plantation with poor survival cannot be relied upon for climate adaptation or resilience simply because it exists. Community consultations and ground verification should therefore explicitly assess whether public assets continue to deliver their intended ecosystem services and climate functionalities before development gaps are treated as resolved.



Key Actions

- 1 Introduce a Climate Vulnerability Assessment module within VGPP.
- 2 Integrate asset functionality and performance assessment into gap analysis.
- 3 Institutionalise community-based verification of asset performance during annual planning.

8.2 Strategic Direction 2

Leverage Jal Ganga Samvardhan Abhiyan as the Convergence Platform for Water Security

VB GRAM G already includes a comprehensive portfolio of water security interventions through its permissible works. Jal Ganga Samvardhan Abhiyan (JGSA) provides a ready institutional platform to plan, implement and scale these interventions

in an integrated manner. By aligning VB GRAM G investments with JGSA and strengthening convergence with PM-KUSUM, Agriculture, Horticulture, Fisheries, SRLM and other sectoral programmes, water conservation assets can evolve into multi-functional public assets that simultaneously strengthen groundwater recharge, irrigation security, biodiversity, renewable energy and rural livelihoods. Beyond improving water security, such convergence can help reduce the cascading impacts of systemic heat by enhancing livelihood resilience, reducing water stress and strengthening the adaptive capacity of rural landscapes and communities.

Suggested Actions

- 1 Position JGSA as the principal convergence platform for implementing water security interventions under VB GRAM G.
- 2 Prepare watershed-based convergence plans linking permissible works with landscape restoration priorities.
- 3 Institutionalise convergence with PM-KUSUM, Agriculture, Horticulture, Fisheries and SRLM to maximise the productive potential of public water assets.
- 4 Promote solar-powered irrigation, fisheries, primary processing, cold storage and women-led enterprises around Amrit Sarovars and other major water assets.
- 5 Monitor water assets based on ecological, livelihood and resilience outcomes, rather than only physical completion.

8.3 Strategic Direction 3

From Isolated Works to Climate-Responsive Public Infrastructure: Mainstream Thermal Resilience across Existing Permissible Works

A natural question arising from this report is whether VB GRAM G can address extreme heat when heat is not explicitly recognised within the Disaster category of the proposed permissible works.

TRI's review suggests that this should not be viewed as a limitation. Heat resilience is already embedded across the broader architecture of the proposed 318 permissible works, although often implicitly. Water harvesting structures, plantation works, rural haats, SHG worksheds, storage facilities, livestock shelters and community

infrastructure all possess significant potential to reduce heat exposure and improve resilience when designed with thermal performance in mind.

Accordingly, the State need not create an entirely new category of permissible works. Instead, it may develop Climate-Responsive Technical Guidelines for selected works. Passive ventilation, shaded public spaces, vegetative cooling, reflective roofing, improved orientation and locally appropriate materials can be progressively integrated into existing infrastructure categories.

Similarly, ecological bioengineering approaches—including Vetiver and other locally suitable vegetation—should be incorporated wherever appropriate for slope stabilisation, erosion control and protection of rural infrastructure.

Key Actions

- 1 Issue climate-responsive design guidelines for selected permissible works.
- 2 Integrate passive cooling principles into rural infrastructure.
- 3 Promote ecological bioengineering as a standard option for erosion control and infrastructure protection.
- 4 Use TRI's analysis of the 318 permissible works to identify priority categories for thermal resilience.

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8.4 Strategic Direction 4

From Individual Houses to Climate-Responsive Rural Settlements through PMAY-G

The findings of this study indicate that thermal stress extends beyond houses to the broader settlement environment where daily rural life unfolds.

TRI's exploratory work suggests that improving thermal comfort should therefore move beyond the building envelope. PMAY-G provides an important entry point, but its climate benefits can

be substantially enhanced through convergence with plantation works, nursery development and landscape greening under VB GRAM G.

Programmes such as **Ek Bagiya Maa Ke Naam** as well as permissible plantation works within VB GRAM G should similarly be viewed not only as plantation initiatives but as opportunities to improve settlement microclimates, strengthen ecological connectivity and enhance community ownership of green infrastructure.

Demonstration Gram Panchayats may therefore be developed where housing improvements are complemented by neighbourhood greening, shaded community spaces, vegetative buffers and passive cooling interventions.

Key Actions

- 1 Develop PMAY-G Climate Settlement Demonstration Gram Panchayats.
- 2 Promote neighbourhood-scale greening and public shade infrastructure, around PMAY-G clusters.
- 3 Develop climate-responsive settlement design guidance for rural local bodies.

8.5 Strategic Direction 5

Link Ecological Restoration with Climate-Resilient Rural Livelihoods

As Systemic Heat progressively weakens the ecological systems on which rural livelihoods depend, ecological restoration must also

become a strategy to strengthen livelihood resilience. Every major ecological investment under VB GRAM G should be accompanied by a livelihood enhancement pathway through structured convergence with SRLM, Agriculture, Horticulture, Fisheries and other relevant departments. Distributed Renewable Energy (DRE) and local cooling infrastructure can further enhance the productivity and economic viability of restored landscapes while strengthening resilience to persistent heat.

Suggested Actions

- 1 Integrate **livelihood enhancement plans** into major ecological restoration works under VB GRAM G.
- 2 Converge **SRLM, Agriculture, Horticulture, Fisheries and allied departments** to support value chains linked to plantations, restored commons and grasslands.
- 3 Promote **women-led producer groups and rural enterprises** based on horticulture, fodder, nurseries, non-timber forest produce and other nature-based products.
- 4 Deploy **Distributed Renewable Energy (DRE)** to support decentralised irrigation, processing, cold storage and other livelihood-enhancing infrastructure.
- 5 Monitor ecological investments based on **livelihood, resilience and ecosystem outcomes**, in addition to physical asset creation.

8.6 Concluding Reflections

The evidence presented in this report suggests that **Systemic Heat demands a corresponding transition towards Systemic Planning**. VB GRAM G already possesses many of the institutional elements required to enable this transition. The opportunity before Madhya Pradesh is therefore not to establish a separate climate programme, but to reinterpret existing planning processes, permissible works and convergence mechanisms through the lens of climate resilience.

By embedding climate vulnerability assessment within VGPPs, strengthening the performance of public assets, leveraging Jal Ganga Samvardhan

Abhiyan as the foundation of water security, mainstreaming thermal resilience across existing permissible works, developing climate-responsive rural settlements, and linking ecological restoration with enterprise development through SRLM and DRE, Madhya Pradesh can demonstrate how rural development itself can become the State's principal strategy for climate adaptation.

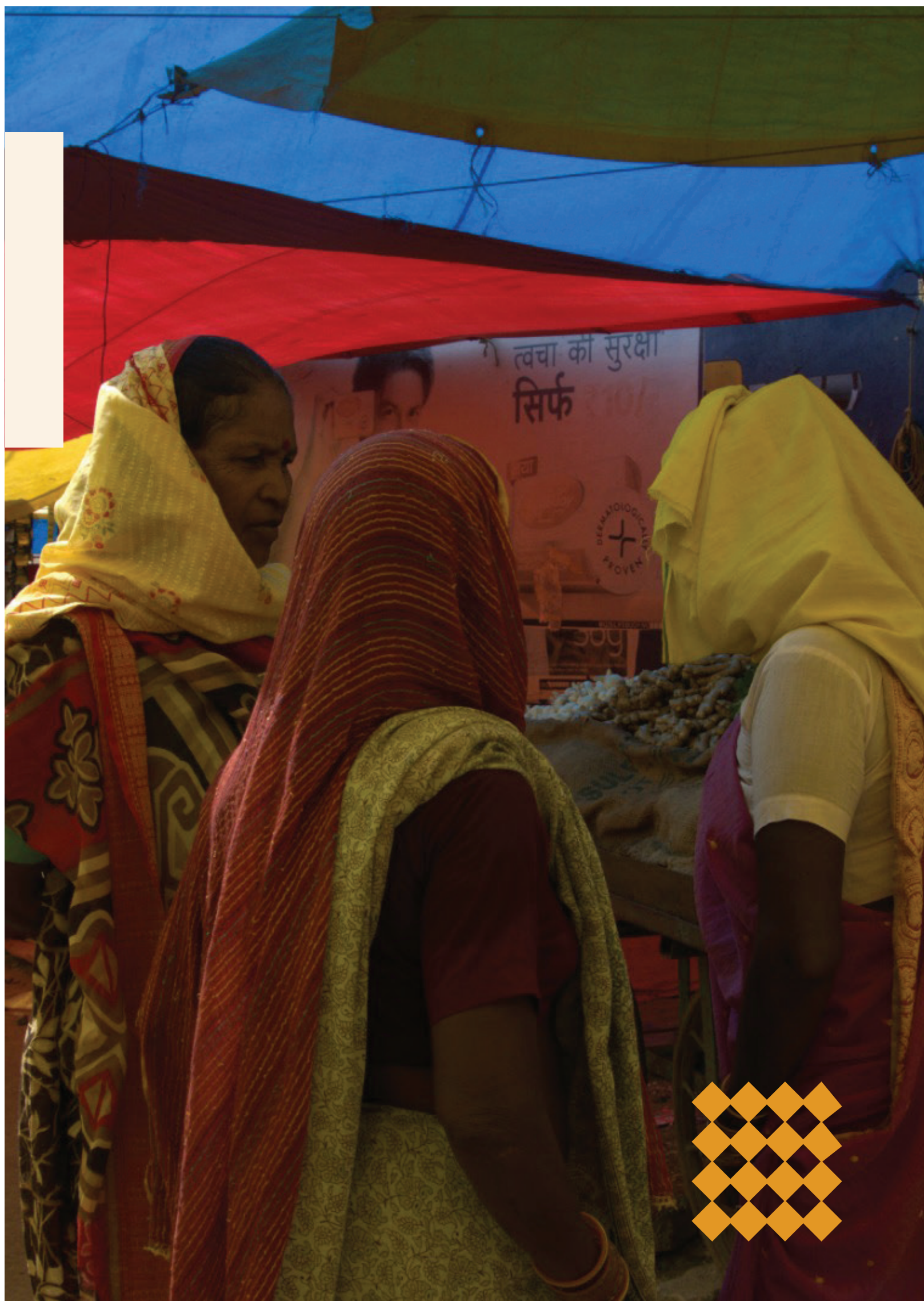
The transition from MGNREGA to VB GRAM G thus represents more than a change in nomenclature. It offers an opportunity to redefine rural public investment—from creating assets to restoring landscape functionality, from delivering infrastructure to strengthening resilience, and from responding to individual hazards to systematically preparing rural communities for a warming future.

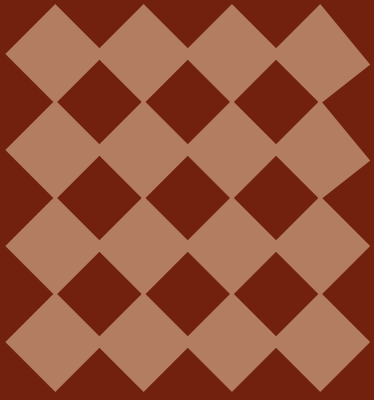
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