Transform Rural India

Reading the Landscape

Communities' Assessment of their Landscape (83 villages)

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We thank the ground staff and field teams of Transform Rural India who facilitated each two-day assessment. They built the trust on which the exercise depended, guided the groups across the landscape, and translated between local dialects so that every voice could be recorded in its own words. We are also grateful to the Billion Next team for their partnership and support in bringing the assessement to completion.

This report is offered in gratitude to everyone, named and unnamed, who contributed to it, in the hope that it returns something useful to the villages whose testimony fills its pages, in keeping with the spirit of Transform Rural India Foundation's work with rural communities.

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Executive Summary

National Picture

80	71	63	52
villages reporting declining wildlife	villages reporting declining water	villages reporting improving community & governance	villages reporting improving infrastructure

The institutions around the village are strengthening while the natural and cultural systems that support village life are weakening.

The people of the assessed villages describe two landscapes moving in opposite directions. Across the 82 villages whose reports were analysed, community institutions were rated as improving in 63 and roads, housing and services in 52. Over the same years water declined in 71 villages, wildlife in 80, farmland and tree cover in 65, culture in 67, the shape of the land in 62, and the look, sound and feel of the place in 62. Public programmes have delivered much of what they were designed to deliver. No single programme, however, is responsible for the water table, the forest edge or the living soil as a whole, and these are what the villages report losing.

These findings come from the assessment of the Community-led Character Assessment Tool, which Transform Rural India (TRI) carried out between February and September 2026 in 83 villages: 25 in Chhattisgarh, 24 in Jharkhand, 21 in Uttar Pradesh and 13 in Madhya Pradesh. In each village, groups of elders, women, youth and farmers read their own landscape across eight themes, the Jeevan Tatvas, traced how it had looked ten and twenty years earlier, and agreed whether each theme was improving or declining. The cross-state analysis draws on the 82 village reports completed at the time of writing, including 20 of the 21 from Uttar Pradesh.

Communities hold a record of this change that no secondary dataset holds. They name what has gone by species: earthworms from the fields of five Chhattisgarh villages and eight in Uttar Pradesh; vultures and sparrows from villages in Chhattisgarh, Madhya Pradesh and Uttar Pradesh; fireflies from Richi and Sukhedi over fifteen to twenty years; fish, prawns and crabs from Choknar's paddy fields. They measure water by the depth at which a borewell strikes it. In Sukhedi, where water was once found at 80–90 feet, it now comes at about 800 feet from some 146 borewells, and a woman who came to the village as a bride described what followed: "People are in a race over who will drill the deeper borewell." They also record what they can no longer smell, see or taste: wet soil after the first rain, stars from a rooftop at night, the flavour of their own rice and dal.

Little of this reaches the systems that plan and finance adaptation. The Central Ground Water Board classes 120 of Chhattisgarh's 146 blocks as safe; in 9 of the 12 Chhattisgarh villages that gave a depth, water now lies three or more times deeper than elders remember. Both readings are accurate at their own scale, but only the block reading currently has a place in the plan. The Gram Panchayat Development Plan (GPDP) and the Village Poverty Reduction Plan (VPRP) have no field for a structured reading of the landscape, climate indices stop at the district boundary, and a village's knowledge reaches the block as a list of demands without the reasoning behind them.

The villages have already begun to act on their own reading. The climate-integrated GPDP drafts for 58 villages in Chhattisgarh, Madhya Pradesh and Uttar Pradesh hold 1,485 actions, and communities can take up 378 of them with their own labour and decisions; Jharkhand's drafts were not part of this set. About 1,340 self-help groups work in the 57 villages that recorded a count. On the research team's reading, 50 villages could begin community-level work now and 30 need one gap closed first.

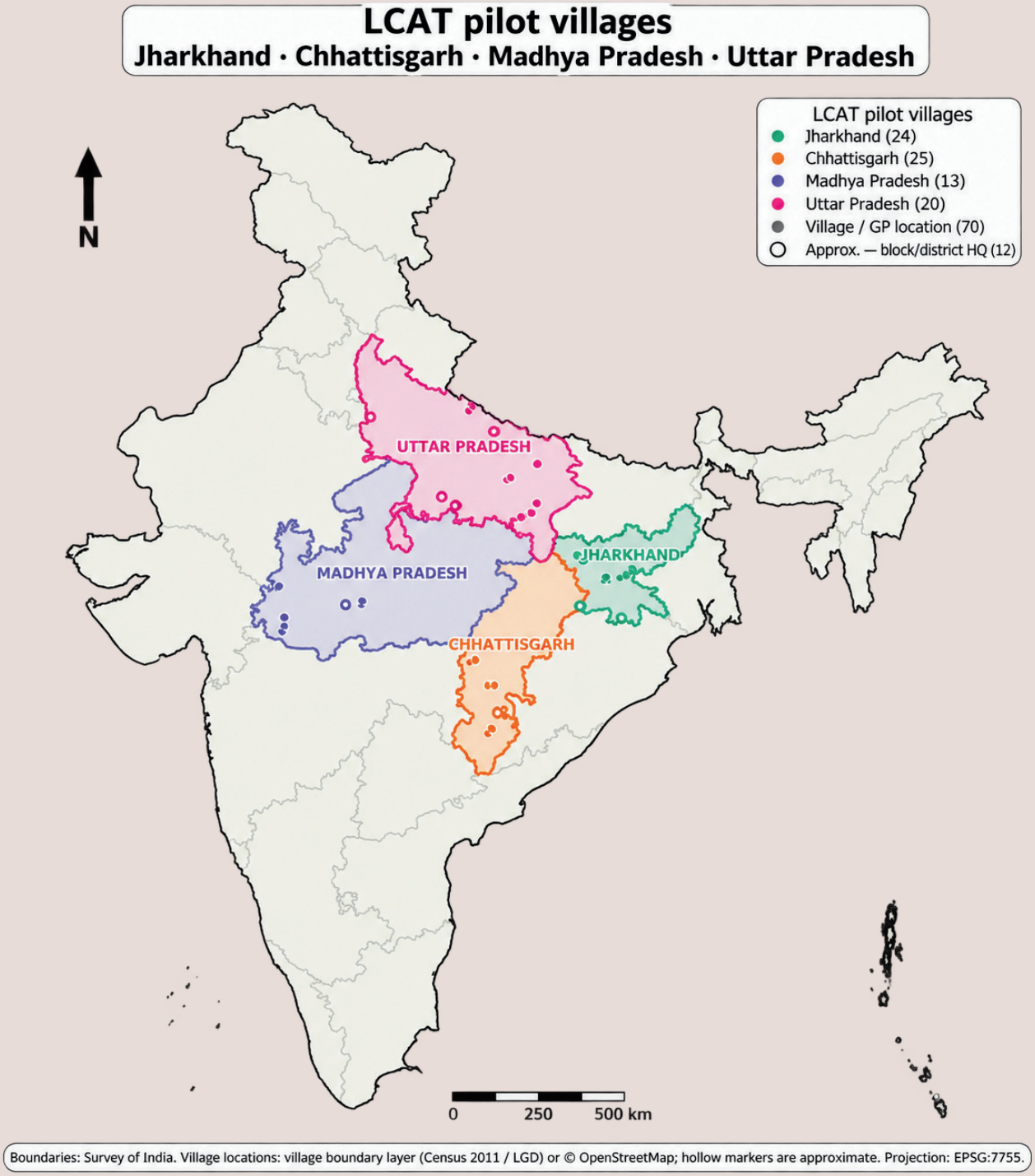
Rather than a single national prescription, the evidence points to four development pathways, each suited to a different kind of landscape: commons stewardship economies on the forested tribal plateaus of Bastar, Kanker and Jharkhand; water-first restoration in Bundelkhand and western Madhya Pradesh; agroecological de-intensification, meaning less chemical and water use while farm income is held, in the Doab and the eastern plains of Uttar Pradesh; and managed land transition where a city or a major project reaches the village, as in Angara near Ranchi and in Ranjit Gadhi near the Jewar airport. Chapter Eight places every assessed village in a pathway.

Each pathway asks something specific of three audiences. Of government: bring the village landscape reading into the GPDP and VPRP as their situation analysis; tag climate spending in those plans to the risk each item addresses; and route works through VB-G RAM G, which replaced MGNREGA from 1 July 2026, alongside the Forest Rights Act and PESA. Of practitioners: facilitate the community's own reading and its record over time, and keep it from shrinking into a list of scheme demands. Of funders: pay for what schemes cover least, which is facilitation, working capital, community monitoring and the stewardship time of women, and use patient and blended capital where a pathway takes years to repay.

What these findings can and cannot claim

These findings are **contextual, not statistically representative of the state as a whole**. The assessment covers a purposively selected set of villages and therefore the numbers reported describe only the communities included in the assessment. **Coverage is also partial**, and some locations or regions are not yet represented. Many trends draw on community recall and lived experience, complemented by official data where available; **some records and indicators were uneven or incomplete**, and figures that could not be reconciled have not been used. **The action plans presented are drafts** informed by the assessment findings, and their subsequent adoption or implementation by Gram Panchayats is not assessed here.

Assessment Sites



Assessed villages of the Community-led Character Assessment Tool in Chhattisgarh, Jharkhand, Madhya Pradesh and Uttar Pradesh. The map shows the 82 villages analysed in this report; hollow markers show locations approximated to the block or district headquarters. Boundaries: Survey of India.

Acronyms and local terms

Scheme names are given as they appear in the chapters, and local terms as the village reports use them.

Term	Meaning
Acronyms	
ATMA	Agricultural Technology Management Agency
CAMPA	Compensatory Afforestation Fund Management and Planning Authority
CEEW	Council on Energy, Environment and Water
CGWB	Central Ground Water Board
CLF	Cluster-level federation of self-help groups
CRAVIS	Climate Resilience Analytics and Visualisation Intelligence System (CEEW)
CREDA	Chhattisgarh State Renewable Energy Development Agency
CSR	Corporate social responsibility
DA-JGUA	Dharti Aaba Janjatiya Gram Utkarsh Abhiyan
DAP	Di-ammonium phosphate (fertiliser)
DDU-GKY	Deen Dayal Upadhyaya Grameen Kaushalya Yojana
EPCO	Environmental Planning and Coordination Organisation, Madhya Pradesh
FPO	Farmer producer organisation
FRA	Forest Rights Act, 2006
FSI	Forest Survey of India
GPDP	Gram Panchayat Development Plan

Term	Meaning
Acronyms	
GPDP	Gram Panchayat Development Plan
JFM	Joint Forest Management
JSLPS	Jharkhand State Livelihood Promotion Society
KVK	Krishi Vigyan Kendra (farm science centre)
MFP	Minor forest produce
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act; replaced by VB-G RAM G from 1 July 2026
MIDH	Mission for Integrated Development of Horticulture
MNRE	Ministry of New and Renewable Energy
NADEP	A pit-composting method named after its developer, N. D. Pandharipande
NFHS-5	National Family Health Survey, fifth round (2019–21)
NLM	National Livestock Mission
NRLM	National Rural Livelihoods Mission
NRM	Natural resource management
ODOP	One District One Product
PESA	Panchayats (Extension to Scheduled Areas) Act, 1996
PHED	Public Health Engineering Department
PKVY	Paramparagat Krishi Vikas Yojana
PM-KUSUM	Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (solar pumps)
PMFME	PM Formalisation of Micro Food Processing Enterprises

Term	Meaning
Acronyms	
PMKSY	Pradhan Mantri Krishi Sinchayee Yojana
PMMSY	Pradhan Mantri Matsya Sampada Yojana
PRA	Participatory rural appraisal
RKVY	Rashtriya Krishi Vikas Yojana
RSETI	Rural Self Employment Training Institute
SBM-G	Swachh Bharat Mission (Grameen)
SHG	Self-help group
SVEP	Start-up Village Entrepreneurship Programme
TRI	Transform Rural India
TRIFED	Tribal Cooperative Marketing Development Federation of India
UPNEDA	Uttar Pradesh New and Renewable Energy Development Agency
VB-G RAM G	Viksit Bharat – Guarantee for Rozgar and Ajeevika Mission (Gramin) Act, 2025, which replaced MGNREGA from 1 July 2026
VHSNC	Village Health, Sanitation and Nutrition Committee
VO	Village organisation of self-help groups (Gram Sangathan)
VPRP	Village Poverty Reduction Plan
Local terms	
5Js	Jal (water), Jangal (forest), Jameen (land), Janwar (animals) and Jan (people)
Akhra	Village gathering and dance ground (Jharkhand)
Bigha	Local unit of land area; its size varies by state and district
Chaupal	Village meeting place

Term	Meaning
Acronyms	
Chua, jhariya	Shallow pits dug to draw water from a spring or seepage
Dhumkudiya	Traditional youth dormitory and place of learning among the Oraon
Dobha, dabri	Small farm pond
Gauthan	Village cattle shelter, also used for compost units (Chhattisgarh)
Ghotul	Youth dormitory institution of the Muria and other Gond communities of Bastar
Jeevan Tatva	The eight landscape themes (life-elements) read in each assessment
Kechua khad	Vermicompost (kechua: earthworm)
Loo	Hot, dry summer wind
Madua, kodo, kutki	Finger millet, kodo millet and little millet
Mukhiya, sarpanch	Elected head of the Gram Panchayat
Pahan	Village priest in Munda and Oraon villages
Samaj, Sarkaar, Bazaar	Community, government and market: the three groups of actors in each state's Table 13
Sarna	Sacred grove and the nature-worship tradition it belongs to (Jharkhand)
Siyan	Elder men (Chhattisgarh)
Tanr, don	Upland and lowland paddy land (Jharkhand)
Tola sabha	Meeting of a hamlet (tola)
Van Samiti	Village forest committee

Transform Rural India

CHAPTER ONE

What the villages found

Why community climate knowledge needs to become legible to planning and finance



CHAPTER ONE

What 83 villages found

1.1 Two directions

In the assessed villages, the institutions people deal with have improved while the land they live from has declined. Of the 82 villages analysed, 63 rate community and governance as improving and 52 rate infrastructure as improving; 80 rate wildlife as declining, 71 water, 67 culture, 65 farmland and tree cover, 62 the shape of the land and 62 its sensory qualities (Figure 1.1). Public programmes have delivered what they were designed to deliver: roads, pucca homes, electricity, taps, and women's collectives that now carry much of village life. The themes that declined are those for which no single programme is responsible as a whole.

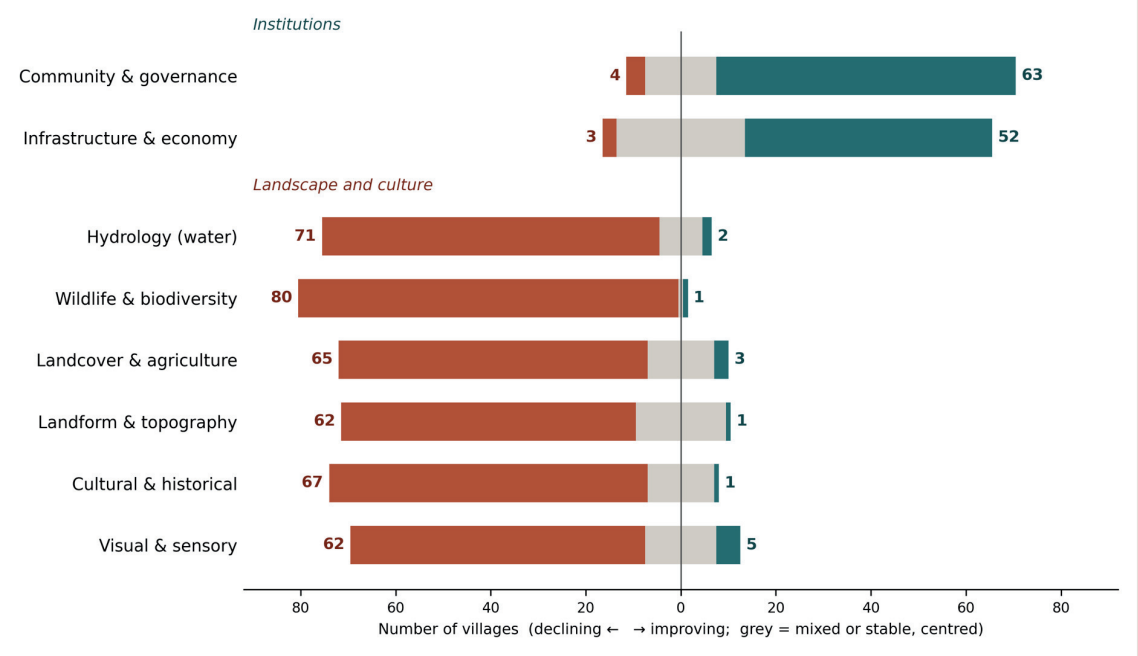


Figure 1.1. Trend direction for each Jeevan Tatva theme across the 82 analysed villages. Declining counts run to the left, improving counts to the right, and mixed or stable counts are centred in grey. Counts are summed from Tables 4.2, 5.2, 6.2 and 7.2; the coding rule is set out in section 3.7. Source: TRI (2026a; 2026d; 2026f; 2026i).

The pattern holds across all four states, with two qualifications. Most Uttar Pradesh villages rate infrastructure as mixed, setting roads and houses against felled trees, hotter homes, irregular power and the young people who leave. In Jharkhand, community and governance is mixed in eight villages and declining in four, where Gram Sabha meetings and forest committees have thinned. In both states, villagers rated a gain lower when it had come at the cost of shade, common land or collective life.

> *"Along with development, we are also seeing destruction."*
> Community statement, Rajadera, Ranchi, Jharkhand

1.2 What has gone, named by species

Villagers dated the decline of their landscape by the species that left it. Earthworms were named as gone or fewer in five Chhattisgarh villages and eight in Uttar Pradesh; vultures and sparrows in Chhattisgarh,

Madhya Pradesh and Uttar Pradesh; fireflies in Madhya Pradesh, Jharkhand and Uttar Pradesh. Farmers in Ranjit Gadhi now pollinate their cucurbits by hand. Choknar's paddy fields no longer hold fish, prawns and crabs, which families now buy (Table 1.1). No secondary dataset records vultures in Barchegondi or fireflies in Richi. The assessment reports are the first baseline for these villages, and the People's Biodiversity Register that each local body's Biodiversity Management Committee is required to maintain under the Biological Diversity Act, 2002 is the natural place to hold it (Government of India, 2002).

The species that arrived are recorded as precisely as those that left: elephants entering fields or homes in ten Jharkhand villages; bears, monkeys and wild boar in fifteen Chhattisgarh villages; nilgai multiplying in five Madhya Pradesh villages and raiding crops in Uttar Pradesh; and tigers and deer reaching Sukhedi when the forest pools dry in May and June.

> *"Earlier we saw tigers, leopards and vultures in the forest. Now that the forest is ruined, bears and monkeys come towards the village looking for food."*
> Village elder, Dhanelikanhar, Kanker, Chhattisgarh

Table 1.1. Species the villages named as lost or arriving. Compiled from Tables 4.2, 5.2, 6.2 and 7.2 and the sentinel-indicator Tables 4.10, 5.9, 6.10 and 7.10. Source: TRI (2026a; 2026d; 2026f; 2026i).



What villagers named	Change	Where	States
Named as lost or declining			
Earthworms	Fewer or gone	Kohkapal, Ghotpal, Daspur, Ulnar, Barchegondi; eight Uttar Pradesh villages, including Kaimokhar, Pakhodna, Alragoura and Pathra	CG, UP
Vultures and sparrows (with peacocks and koel in CG, butterflies in MP)	Rarely seen or heard	Barchegondi, Daspur, Borgaon, Sidesar, Margaon; Ekalbara, Richi, Sukhedi, Ramgarh; Pakhodna, Kaimokhar, Bhedaha, Balapur	CG, MP, UP
Fireflies	Gone over 15–20 years in MP; fewer elsewhere	Richi, Sukhedi; Gurha, Kotpali, Chokad; Bhedaha, Kaimokhar	MP, JH, UP
Bees and other pollinators	Fewer; cucurbits now pollinated by hand	Gurha, Kotpali, Chokad; Sali, Ramgarh, Naharpura; Ranjit Gadhi	JH, MP, UP
Palash	Declining	Sali, Ramgarh, Naharpura	MP

What villagers named	Change	Where	States
Fish, prawns and crabs in paddy fields	Gone; now bought in the market	Choknar	CG
Frogs, fish and turtles	Gone from ponds and canals	Ranjit Gadhi, Pathra, Bagheda Khurd	UP
Wild foods: jirhul, khukhdi, putu	Disappearing	Basariya Khurd, Gurha	JH
Bamboo	Walk grown from 2–3 km to 8–10 km	Hidpal	CG
Named as arriving			
Elephants	Entering fields or homes, often for the first time	Ten villages, including Chatra, Nawagarh, Hulsi and Chokad	JH
Bears, monkeys, wild boar	Entering fields	Fifteen villages	CG
Nilgai	Multiplying as predators vanish; raiding crops	Sukhedi, Mor, Naharpura, Ramgarh, Richi; Uttar Pradesh	MP, UP
Tigers and deer	Coming to the village for water in May–June	Sukhedi	MP

A Gram Sabha could record these signs each season, using the assessment report as its baseline.

1.3 The landscape through the senses

Villagers described change through the senses as often as through numbers, and those descriptions carry information. The smell of wet soil after the first rain has faded in Barchegondi, Dhanelikanhar and Margaon. In Mor the stars and the cool night breeze are gone. Rice, dal and vegetables are described as less flavourful in Chipawand, Sidesar and Cha Tolagaon, and in Upar Barga and Rabda fruit and food "no longer taste as before". In ten Jharkhand villages the DJ has replaced the dhol at festivals. The sensory landscape was rated as declining in 62 of the 82 villages, and heat was the change named most often.

> *"We used to sleep on the roof; a breeze blew and we could see the stars. Now even the night is hot. The roof burns, the room below burns. Where will sleep come from?"*
> Young woman, Barchegondi, Kanker, Chhattisgarh

Each of these sensory observations points to a physical change that a block officer can act on: hot nights to cement roofs and the loss of shade trees, the fading smell of rain to the condition of the soil, and a changed taste to soil health and chemical inputs. Five Jharkhand villages rated the sensory landscape as improving, crediting pucca homes and greener irrigated fields: Kesha, Kokde, Kotpali, Cherabar and Nawagarh.

1.4 The village record and the official record

Official data and the village record diverge most where official data are averaged over a larger area. In each case in Table 1.2 both readings are accurate at their own scale, and the village reading is the one the plan needs.

Table 1.2. The village record set against the official record. Entries are drawn from Chapters Four to Seven; the lightning figure is from NCRB (2025).

Topic	Official reading	Village reading	What the gap means for the plan
Groundwater, Chhattisgarh	120 of 146 blocks safe; about 47% of extractable groundwater in use (CGWB)	In 9 of the 12 villages that gave a then-and-now depth, water three or more times deeper; Choknar 90 ft in April 2024, 120 ft by April 2025	A block classed as safe can contain villages whose wells are failing; recharge needs to be planned village by village.
Groundwater, Jharkhand	About 31% of extractable groundwater in use; 5 of 263 units over-exploited (CGWB)	Chokad's borewells past 800 ft, against water at about 20 ft two decades ago	On hard rock, aquifers are local; block figures hide village failure.
Climate vulnerability, Chhattisgarh	Rank 26 of 35 on CEEW's Climate Vulnerability Index	Hotter summers in all 25 village reports	An index built on acute disasters under-reads chronic heat.
Heat, Jharkhand	Rated moderate at state level (CRAVIS)	Rising heat in 15 of 24 reports; "hottest year in memory" (Rabda)	A moderate state rating gives a block officer no reason to plan for heat that 15 villages already report.
Lightning, Jharkhand	194 deaths from lightning in 2023, among the five highest state tolls (NCRB, 2025)	Raised in none of the 24 reports	The village record has gaps too; facilitators need to prompt for hazards that villagers take for granted.
Delivery against plans, Chhattisgarh	Solar pump allocations reached two farmers in Borgaon	32 water plans prepared in Borgaon; 68% of the state's GPDP actions depend on schemes	Village plans are ready, but no finance channel is yet set up to act on them.

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CHAPTER TWO

Reading the Village Whole

Why community climate knowledge needs to become legible to planning and finance



CHAPTER TWO

Reading the Village Whole

Why community climate knowledge needs to become legible to planning and finance

2.1 Where the conversations began

The people of the 83 assessed villages hold a detailed, dated record of how their landscape has changed, and the systems that plan and finance adaptation in rural India have no place to put it. An elderly farmer in one of the assessed villages was asked what had changed over the years. He did not begin with rainfall or yields. He began with a smell.

> *"Ten years ago, when the rain fell, the soil would give off that earthy fragrance after the first shower. Now even that is gone."*
> Elderly farmer, field conversations during the assessments

The loss he describes is precise. The scent of rain on dry soil comes largely from compounds released by living soil organisms (Bear and Thomas, 1964). Villagers in Barchegondi, Dhanelikanhar and Margaon recorded the same loss, and Barchegondi also named the earthworms that have left its fields. No instrument in the village records either change, and no planning format asks about them. This report sets out what the villages recorded, why that record does not reach the plan, and what would allow it to.

Across the villages, people described change in much the same way. They spoke of a wind that once cooled the village so well that nobody needed a fan, of a forest whose name has been forgotten, of roofs that have become too hot to sleep on in summer, and of mahua trees that now shed their flowers before the season. One farmer described the loss of a skill he had never before had to think about:

> *"Earlier we could look at the sky and know when to sow. Now we check the weather on the phone, and the phone, too, gets it wrong."*
> Farmer, field conversations during the assessments

Each of these statements is a record of environmental change, held by someone who has watched the same fields, ponds and forest edges for most of a lifetime. Each is also an expression of feeling. Sometimes the feeling is grief, sometimes confusion or anger, and quite often it is a determined hope that what has been lost can be restored. This report takes both the record and the feeling seriously. Its central argument is that the knowledge rural communities hold about their changing landscapes is among the most detailed climate evidence available at the village scale, and that its main weakness lies outside the village, in planning and finance systems that are not built to read it.

The findings presented in the chapters that follow come from the assessment of the Community-led Character Assessment Tool, a community-led participatory exercise developed by Transform Rural India (TRI) and carried out in 83 villages across four states: 25 in Chhattisgarh, 24 in Jharkhand, 21 in Uttar Pradesh and 13 in Madhya Pradesh. In each village, residents assessed the condition of their own landscape across eight themes, traced how each theme had changed over the past few decades, voted on whether it was improving or declining, and agreed on the priorities they wanted their panchayat and the government to act on. This chapter explains why such an exercise is needed, and Chapter Three describes how it was conducted.

2.2 A knowledge that planning systems cannot read

The political scientist and anthropologist James C. Scott (1998) used the term legibility to describe how modern states come to know the territories they govern. To administer land, forests and people at scale, a state must first simplify them into forms it can count, map and compare, such as the cadastral survey, the census category and the standard unit of measure. Scott did not argue that such simplification can be avoided. His concern was with what happens when the simplified picture is mistaken for the place itself, and interventions are designed on that basis. His opening example was scientific forestry in eighteenth-century Germany, where mixed woodland was replaced with uniform stands that were easy to measure and harvest and which, a generation later, went into decline. Madhav Gadgil and Ramachandra Guha (1992) traced a comparable history in India, where colonial forest administration took control of forests that communities had long managed under customary rules, weakening both those rules and the relationship between people and the woods they depended on.

Climate planning in rural India inherits this problem in a new form. The knowledge that matters most for adaptation at the village level is held as memory and narrative: which spring fails first in a dry year, which slope loses its soil when rain arrives in short and heavy bursts, how much further women walk for water in May than they did twenty years ago. The systems that decide what gets built and funded work with a different kind of information, organised around scheme categories, technical estimates, district-level indices and budget heads. A community's knowledge usually reaches these systems as a story told at a meeting, and the systems have no field in which to record it.

What survives the journey is a list of demands, separated from the reasoning that produced them.

Three gaps keep this situation in place. The first is normative. The formats that govern village planning, the Gram Panchayat Development Plan (GPDP) and the Village Poverty Reduction Plan (VPRP), contain no requirement for a structured reading of the local landscape or of its vulnerability to climate change, so a panchayat that wished to plan for climate would find no template inviting it to do so. In the assessment, the villages' landscape reading could reach the plan only through a separate climate-integrated draft of the GPDP, prepared alongside the standard format.

The second gap concerns the reach of formal climate science. Reliable climate analysis depends on long and continuous local records, and such records are scarce below the district level. The shortage of local climate and disaster data has been identified as a constraint on reducing vulnerability on the ground, and assessment processes have tended to leave out the people most affected by climatic change (Mohanty, 2020). Risk maps stop at the district boundary, while a village lives in particulars: this well, this slope, this field. In Chhattisgarh the Central Ground Water Board classes 120 of 146 blocks as safe, while in 9 of the 12 villages there that gave then-and-now depths, water now lies three or more times deeper than elders remember.

The third gap lies in delivery. Agricultural extension, early warnings, credit and insurance all thin out towards the last mile, and the infrastructure intended to absorb climate shocks is itself exposed to them. Health facilities in a large share of districts already face high climate risk, and roads, power and water systems tend to fail together in the very events for which they are most needed (CEEW and UNICEF, 2025). In Borgaon, which has 32 water plans ready, solar pump allocations have so far reached two farmers.

These gaps shape how village plans are made. Without a structured reading of the landscape, planning tends to proceed by inventory. Water works are scheduled scheme by scheme rather than against a village water budget, natural resource works are chosen without reference to any logic of regeneration, and livelihood plans seldom ask whether a crop still suits a changing climate. Heat and water stress are treated as a series of separate events, such as a bad year, a dry spell or a flood to be relieved, rather than as a condition that is reshaping the whole landscape. A pond may be deepened while the catchment that feeds it continues to degrade, and a plantation may be established on land that was once a grazing corridor.

Finance follows the same pattern. Most of the public money that could support adaptation in a village reaches it through existing development schemes and panchayat grants. For that spending to be recognised, tracked and improved as adaptation, it has to be linked to a climate risk that the plan has identified. When the plan contains no reading of that risk, the link cannot be made, and nobody can say whether the money reduced the village's vulnerability or simply added another asset to the register. Climate budget tagging, which marks each item of spending against the risk it is meant to reduce, depends on that link, and at the village level the link does not yet exist.

The outcome is a double disconnection. People are being separated from the places that hold their knowledge and identity, as the farmer who can no longer read his sky and the elder who can no longer find the forest she grew up beside both testify. At the same time, planning has become separated from this lived reality, and is organised around schemes and entitlements, with little reference to the landscape those schemes are meant to serve. The two disconnections reinforce each other, because a plan that does not begin from what a community has lost is unlikely to restore it. The Community-led Character Assessment Tool was designed to work on both at once, by giving communities a structured way to read their own landscape and by putting that reading into a form that planning and finance systems can use.

1 · NORMATIVE GAPS

No rule or template asks a village plan to look at climate. National and state climate plans rarely spell out a role for panchayats — and lean toward relief after disaster rather than adaptation before it.

2 · THE LIMITS OF DISTANT SCIENCE

Reliable long-term local data is scarce; risk maps stop at the district. Formal assessments often sideline the very people affected — and speak in probabilities, while a village lives in particulars: this well, this field.

3 · THIN INFRASTRUCTURE & SERVICES

Extension advice, early warnings and credit rarely reach the last mile — and the clinics, roads and power lines that should absorb climate shocks are themselves exposed to them.

2.3 The changing climate in brief

3 IN 4
Indian districts are hotspots for severe hydro-meteorological events Analysis by the Council on Energy, Environment and Water (CEEW).

40%+
of districts show the reported "swapping" trend. (Mohanty, 2020)

80%
of India's population lives in districts highly vulnerable to extreme hydro-meteorological disasters. (Mohanty and Wadhawan, 2021)

The monsoon is where this change bears hardest on rural life. More than half of India's net sown area is rainfed, so the timing of the rains decides the fate of the year's crop for a very large number of households. CEEW's tehsil-level analysis finds that where the southwest monsoon is weakening, the decline is concentrated in June and July, the weeks in which kharif crops must be sown, while many tehsils are seeing more days of heavy rainfall (Prabhu and Chitale, 2024). Water is arriving in the wrong shape, with too little when the seed needs it and too much at once when the soil cannot absorb it. What farmers in the villages described as rain that no longer keeps its time is, in aggregate, a measurable shift in the season.

National statistics of this kind establish the pattern, and they are essential for allocating resources across states and districts. They cannot tell a panchayat which spring to protect first, which field has stopped holding moisture,
or which households lose their income when the mahua flowers bloom early. That knowledge is held in the village, and the rest of this chapter is concerned with how to reach it and how to carry it into planning.

2.4 People and place: what the scholarship tells us

The design of the Community-led Character Assessment Tool draws on a body of work in geography, anthropology, psychology and development studies about the bond between people and the places they inhabit. Five ideas from this work shaped the method, and each is summarised here together with the design choice it informed.

The geographer Yi-Fu Tuan (1974) called the affective bond between people and their environment topophilia. In rural India this bond is practical as well as emotional. A farmer's sowing calendar, a herder's grazing route, the timing of a festival and the protection of a sacred grove are all tuned to the rhythms of one particular landscape. When those rhythms hold, people read their place fluently, and climate change, experienced at close range, is the loss of that fluency. For this reason the assessment opens with a question about the place people already know, which is simply what has changed there.

The anthropologist Tim Ingold (2000) argued that people come to know their environment by living in it and moving through it, so that knowledge of a landscape is formed through everyday practice and skill, in the course of work and movement. Keith Basso's (1996) study of the Western Apache showed how place names, and the stories attached to them, carry knowledge and moral instruction from one generation to the next.

These two accounts explain why the assessment begins with a transect walk across the village's lands and opens its plenary by playing back what was seen there, so that observations are discussed with reference to real places, and why it pays close attention to names, stories and landmarks. When an elderly woman in one village said that there is no name or trace left of the forest, she was describing the loss of a record as well as the loss of trees.

The environmental philosopher Glenn Albrecht (2005) coined the word solastalgia for the distress people feel when the environment of their home changes around them while they are still living in it. Nostalgia is the pain of missing a place one has left, whereas solastalgia is the pain of watching a place one has never left become unfamiliar. The farmer who misses the smell of the first rain and the farmer who can no longer read the sky are both describing it. Climate work has often treated such testimony as colour, to be quoted before the real data begin. The assessment treats it as a signal that something in the functioning of the landscape has shifted, and as a pointer to where to look more closely.

The social psychologist Kurt Lewin (1936; 1951) proposed that behaviour is a function of the person and their environment together, which he expressed as B = f(P, E), and that each person acts within a life space made up of the place, relationships and possibilities they perceive. Adaptation is, in the end, a change in behaviour: sowing differently, storing water differently, managing a commons differently. Lewin's framework implies that such change cannot be achieved by working on people while ignoring their place, or by working on the place while ignoring how its people experience it. His later research on group decision-making, discussed in Chapter Three, also informed how the assessment moves participants from individual observation to collective commitment.

The development scholar Robert Chambers (1997) asked, in the title of an influential book, whose reality counts. He argued that the knowledge and priorities of poor rural people are routinely overwritten by those of outside professionals, and that participatory methods should be designed so that local people analyse their own situation and set the agenda. That argument underlies the tool's insistence that villagers themselves draw the charts, present their findings, vote on the trends and rank the priorities, while facilitators come to listen and to ask questions.

Read together, this scholarship suggests that climate change is first experienced through the bond between people and a particular place, that the knowledge needed to respond to it is embedded in that bond, and that plans which ignore it are unlikely to change what people actually do. For village planning, the implication is that the community's own reading of its landscape should come first, before any list of works is drawn up.

2.5 Ecological memory as evidence

In ecology, ecological memory refers to the legacy of past conditions that shapes how an ecosystem recovers after disturbance, including the surviving species, the seed stored in the soil and the patches of older vegetation from which a landscape can reorganise (Bengtsson et al., 2003). This report uses the term in a closely related human sense, to mean the record of past conditions held by people who have lived with a landscape over decades. The two meanings meet in practice, since an elder's recollection of which trees once grew on a hillside is often the best available guide to what that hillside can support again.

The case for treating this memory as evidence rests partly on a problem that the fisheries scientist Daniel Pauly (1995) called the shifting baseline syndrome. Each generation tends to accept the condition of the environment it first knew as normal, so that gradual decline across generations goes unrecognised and each new baseline is lower than the one before. Pauly argued that the accounts of older fishers should be treated as data for reconstructing what had been lost. The same reasoning applies in the assessment villages. A grandmother may remember dense forest where her grandson has only known scrub, and without her account the scrub becomes the baseline against which any restoration is judged. The tool's decadal timelines, described in Chapter Three, were designed to recover these earlier baselines while the people who hold them are still able to share them.

A substantial body of scholarship supports the use of such knowledge. Fikret Berkes (1999) describes traditional ecological knowledge as a cumulative body of knowledge, practice and belief about the relationships between living beings and their environment, handed down across generations and adapted over time. Earlier work by Gadgil, Berkes and Folke (1993) documented how such knowledge sustained conservation practices in India, including the protection of sacred groves. The Intergovernmental Panel on Climate Change, in its Sixth Assessment Report, recognises Indigenous knowledge and local knowledge as sources of evidence alongside scientific knowledge, and finds that adaptation is more effective when it draws on them (IPCC, 2022). Arun Agrawal (1995), however, cautioned against treating local knowledge as pure, fixed or wholly separate from science. It varies between people, it is contested within communities and it changes over time. Taking it seriously therefore means handling it with care and checking accounts against one another.

The Community-led Character Assessment Tool puts this principle into practice in several concrete ways. Testimony is recorded verbatim. In each group, a participant records the key points on chart paper while a note-taker, who takes no part in the discussion, writes down what is said, by whom and about which place, so that the village's own words become the primary record; in the phrase used in the practitioner training, the team is building evidence rather than writing a summary (TRI, n.d.). Observations are anchored to specific locations, many of them seen during the transect walk, so that a claim about a drying pond refers to a named pond that others can also visit. Accounts are compared across groups, and an observation that appears independently among elders, among women and in a theme group carries more weight than one voiced only once. The direction of change for each theme is then put to a vote, which turns many individual observations into a collective judgement while keeping disagreement visible. Where secondary data on rainfall, land use and population were available for a village, they were compiled so that the community's account and the official record could be read side by side.

Memory also has limits, and this report aims to be clear about them. People recall the direction and character of change more reliably than exact dates or magnitudes, so a drought remembered as happening ten years ago may have occurred eight or fourteen years ago. The most confident speakers can shape a group's account, and memories of the past can be coloured by longing. The method's reliance on several groups, on walking the land and on voting is intended to reduce these risks, and the findings chapters indicate where an observation rests on thin or contested evidence. Handled in this way, community memory does not replace instrumental measurement. It supplies what measurement cannot provide at this scale, which is a long, place-specific record of change interpreted by the people who live with its consequences.

2.6 What the exercise meant to the people who took part

The assessment was an exercise in gathering evidence, but it would misrepresent the villages to describe it only in those terms. For many participants, the plenary was the first occasion on which they had been asked, in public and at length, what their land had been like and what it has become. The feelings that emerged were strong and varied, and they form part of the findings.
One of the feelings heard most clearly was grief for a landscape that no longer behaves as it once did. A pastoralist remembered the village of his youth in these terms:

> *"The forests were dense, a beautiful wind kept blowing, no fan was needed, and good rain and harvest used to come."*
> Pastoralist, field conversations during the assessments

He was describing a working ecosystem, in which canopy, wind, rain and harvest were connected, and he remembered it as a single whole.
Some participants also expressed frustration with a planning system that they experience as distant from their lives, and an elder in one village said:

> *""The government makes its schemes for itself, not for us."*
> Village elder, field conversations during the assessments

Worries about the future differed by group. Elders described decline, and in Kohkapal, Ghotpal and Tumdibod they said their counsel is sought less often than before. Young people in Ranjit Gadhi put the choice in one line: 'There is nothing to do here: either farm, or leave the village.' Women described the future in hours, as in Ram Nagar Kanda: 'The weight of water and of housework on the women goes on increasing, slowly, slowly.' In Rabda, where most households are landless, the future rests on wage labour and a forest that is thinning.

Hope was present too, often in the same sentence as loss. An elderly woman offered both a diagnosis and a direction:

> *"There is no name or trace left of the forest in our village; in the future, we want to see it green again."*
> Elderly woman, field conversations during the assessments

By the close of the plenary, what several participants spoke of was the experience of having looked at their village together. A member of a women's self-help group explained what had changed for her:

> *"This is the first time we have looked at our village, and all that has changed in it, together, as one community."*
> Self-help group member, field conversations during the assessments

These feelings matter for planning as well as for the record. Grief shows what people value, and hope shows what they are prepared to work for. A priority that a community has argued over and committed to in public is also more likely to be defended when implementation begins and resources are contested. Throughout the exercise, the facilitators' task was to make room for these feelings without steering them, and to record them with the same care as any other observation.

Transform Rural India

CHAPTER THREE

How the assessment was carried out

Why community climate knowledge needs to become legible to planning and finance



CHAPTER THREE

How the assessment was carried out

In the Community-led Character Assessment Tool, the community is the assessor. Facilitators structure the conversation and record what is said; the reading of the landscape, the direction of each trend and the priorities for action belong to the village. That choice explains most of what follows in this chapter: memory treated as evidence, separate groups for elders, women and youth, a vote on each theme, and a handover to the Gram Sabha. The chapter follows the exercise closely enough for a reader who has never attended one to picture it; the facilitation method in full is in the Community-led Character Assessment Tool Playbook (TRI and Bharat Design Lab, 2026).

3.1 Origins of the tool

The Community-led Character Assessment Tool is adapted from Natural England's approach to Landscape Character Assessment (Natural England, 2014), a method used in the United Kingdom to describe what makes one landscape distinct from another. It looks at the particular combination of landform, soils, water, vegetation, land use, settlement and history that gives a place its character, and in the United Kingdom such assessments are usually led by landscape professionals and used to guide planning and land management.

TRI adapted this approach for rural India in two ways. It added a climate-resilience lens, so that reading a landscape also means reading its trends, its stresses and its likely future. It also added an equity-and-memory lens, so that the assessment captures intangible assets that official datasets routinely miss, such as sacred groves, grazing routes, oral histories and the shade of a particular stand of trees. These assets carry much of a community's identity and a landscape's resilience, and they are usually the first to disappear from a spreadsheet. The most important change, however, concerns who carries out the assessment. In the Community-led Character Assessment Tool, the community is the assessor, and the facilitation team's role is to structure the conversation and to record faithfully what is said.

3.2 The eight landscape themes

The assessment reads the village through eight landscape themes, known within TRI as the *Jeevan Tatvas*, or life-elements. Facilitators often introduce the eight themes like the parts of a body, each necessary to the health of the whole, so that none can be harmed without the others being affected.

3.3 Why the people–place bond is the starting point

TOPOPHILIA

Yi-Fu Tuan, 1974

The deep attachment between people and their home landscape. In rural India it works like infrastructure: sowing calendars, grazing routes, festivals are all tuned to one particular place.

SOLASTALGIA

Glenn Albrecht, 2005

The distress of watching your home landscape change while you still stand within it — homesickness without leaving home. Documented carefully, it is early-warning data.

FIELD THEORY

Kurt Lewin, 1936 / 1951

Behaviour is a function of the person and their environment, B = f (P, E). What people do — and can change — cannot be read apart from the place they act within.

Three thinkers, one lesson: the people–place bond is where climate planning must begin

To understand why a lost fragrance matters, we must take the bond between people and place seriously. Yi-Fu Tuan described this attachment as topophilia—the emotional connection between people and their environment (Tuan, 1974). In rural India, this relationship shapes everyday life: farming calendars, grazing routes, water practices, festivals and sacred spaces all depend on the rhythms of a particular landscape. Kurt Lewin similarly argued that behaviour emerges from the interaction between people and their environment, expressed as B = f(P, E) (Lewin, 1936; 1951). Climate adaptation, therefore, requires changing both practices and the places in which people live, rather than treating either one in isolation.

For every theme, the discussion is guided by four core questions.

a. What has changed in this area over the last ten to twenty years?
b. Why do you think these changes have happened?
c. Who has been most affected by these changes, and how have women been affected differently? d. What can be done to improve the situation?

The questions move from observation to cause, from cause to impact and from impact to action, and the same sequence runs through the whole assessment.

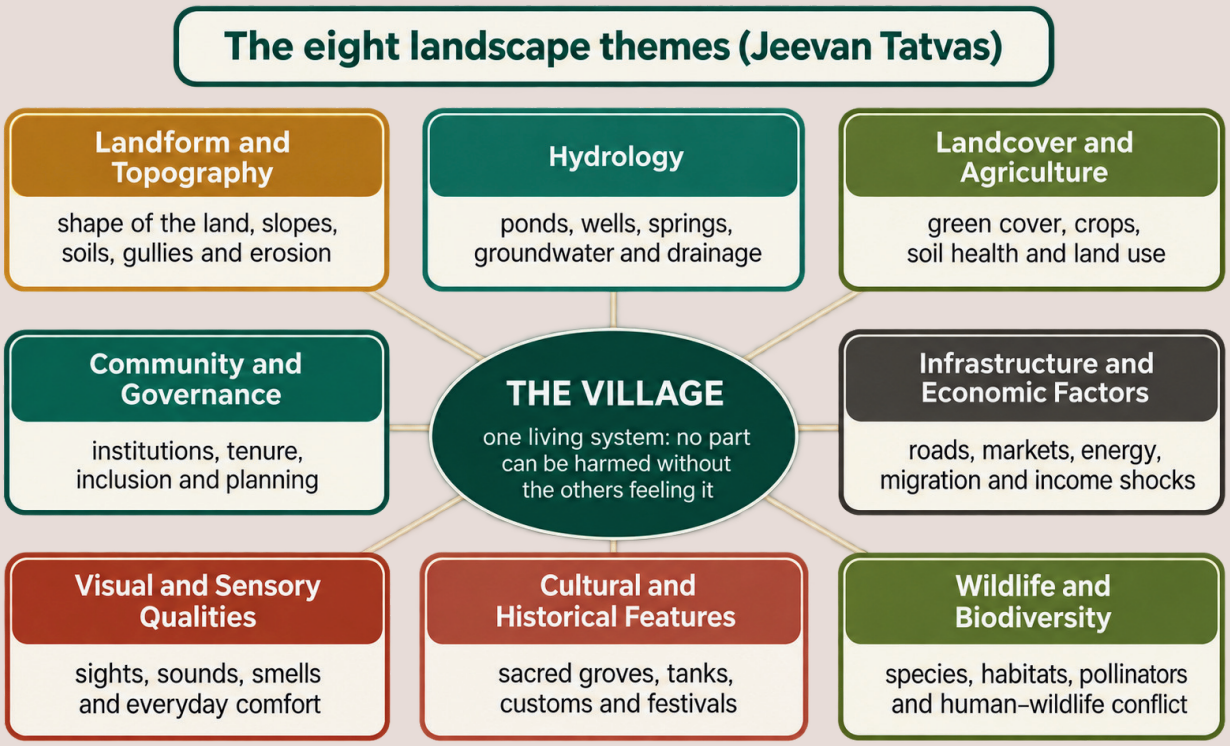


Figure 3.1: The eight landscape themes, read as parts of one village

3.4 What each village takes away, and where it goes

By the end of the exercise the village produces, four outputs that together build a shared understanding of the landscape.

1. The first is a landscape profile, a comprehensive view of the village across the eight themes.
2. The second is an account of trends, drivers and impacts, covering the key changes over time, their underlying causes and how they affect people and the landscape.
3. The third is a set of integrated insights, which bring together patterns, interconnections and relationships across themes.
4. The fourth is a set of priority action areas to guide planning, convergence and implementation.

These are brought together in the report and tiered action plan that are grounded in community knowledge, clear and easy to interpret, and directly usable by programme teams, community institutions and government.

The outputs are designed to feed the village's existing planning cycle. The landscape profile provides the situation analysis with which the GPDP and VPRP process begins. The action plan, with its three levels of support, separates what the village will do itself from what it will ask of others. The priorities go before the Gram Sabha, the assembly of all adult residents of the panchayat, and into the plans of the VO and CLF. Panchayat representatives thus gain a shared evidence base with which to negotiate convergent, climate-resilient works with line departments, including those responsible for the rural employment guarantee, now the Viksit Bharat – Guarantee for Rozgar and Ajeevika Mission (Gramin) Act, 2025 (VB-G RAM G), which replaced MGNREGA on 1 July 2026 (Government of India, 2025), watershed development, forestry and agriculture.

Each priority reaches the planning system with its reasoning attached: the theme it concerns, the direction of change the village voted on, the place where the change was observed, the people most affected and the level of support required. In this form, community knowledge becomes something that planning and finance systems can read, and spending can be linked back to the risks the village itself identified. The elder who said that the government makes its schemes for itself was describing a system in which villages are fitted to schemes. The Community-led Character Assessment Tool aims to reverse that direction, so that schemes are shaped around the village's own reading of its landscape.

3.5 Reading the findings in this report

The chapters that follow give an overview of the findings from each of the four states: Chhattisgarh (25 villages), Jharkhand (24 villages), Uttar Pradesh (21 villages) and Madhya Pradesh (13 villages). Each state chapter brings together what communities reported across its villages. It sets out the main changes they observed in each landscape theme, the direction of those changes as the villages voted on them, and the priorities the communities agreed to act upon. A state overview inevitably condenses a great deal of material. In preparing these chapters, we have tried to stay as close as possible to what was said and recorded in each village, and to avoid smoothing over differences between villages for the sake of a tidier summary. Where the villages of a state disagreed, or where one village's experience stood apart from the others, the chapter says so. Chapter One reads across the four states, and Chapter Eight draws them together into alternative development pathways.

A few conventions apply throughout. Quotations from participants are reproduced as they were recorded and translated into English, and speakers are identified by group or role, village and state. Where the direction of change for a theme has been inferred from the discussion because no vote was recorded, this is stated. Figures drawn from secondary sources are cited, and community observations are kept distinct from them.

The findings are community assessments. They describe how residents of the assessed villages observe, interpret and experience change in their landscapes, and they are strongest on the direction, character and connectedness of that change. They are less precise on dates and magnitudes, for the reasons discussed in section 2.5. Participation varied between villages, facilitation across 83 villages cannot have been perfectly uniform, and every account has passed through translation.

The state chapters should therefore be read as the assessed villages' own account of their landscapes, brought together at state level in a form that allows comparison and can be carried into the planning cycle, with the limits of that account stated wherever they apply.

3.6 How the state chapters were built

Between February and September 2026, TRI field teams facilitated assessments in all 83 villages, working in Hindi, Chhattisgarhi, Halbi, Bhatri and other local languages. At least 1,481 people took part in the 27 villages outside Chhattisgarh that recorded attendance; in Chhattisgarh, women made up more than half of those present wherever attendance was counted.

In every state the villages were chosen purposively from blocks where TRI's field teams already work, using the Gram Panchayat selection framework developed for the assessment. In each village, groups traced how the village had looked in the past and discussed change through the 5Js: Jal (water), Jangal (forest), Jameen (land), Janwar (animals) and Jan (people), recording their findings for each of the eight Jeevan Tatva themes with the trend direction the group agreed. The Chhattisgarh and Uttar Pradesh groups looked back 5, 10 and 20 years; the Jharkhand and Madhya Pradesh groups looked back 10 and 20 years. Any comparison over time across all four states is therefore limited to 20 years ago, 10 years ago and today.

The assessment covers 83 villages. The Uttar Pradesh chapter draws on the 20 village reports from that state that were complete at the time of writing, so counts that compare states cover 82 villages.

Each village report records the community's own direction for every theme, and the state chapters group these into three categories: improving, declining, and mixed or stable. Where a report gives two directions for one theme, such as better tap access but falling groundwater, the theme is counted as mixed or stable. Where a report gives reasons but no direction, as in Mor and Naharpura in Madhya Pradesh, the direction is taken from the report's own synthesis. Two Jharkhand villages (Bangaon and Bhaibail) used a general participatory rural appraisal format and two (Beterkia and Gaongutu) scored concern alongside change; their directions are likewise taken from each report's synthesis. The heat maps in Chapters Four to Seven and the counts in Figure 1.1 follow these rules.

Each village report also traces how one change leads to the next. For each state, these chains were read together and grouped into four recurring loops. The green value chains that villages named were grouped, for comparison, into ten under three families, and each is described against six readiness factors: resource base, existing institutions, market link, women's role, climate co-benefit and scheme hook. Four loops and ten chains are a choice made for comparison across states; the number of villages naming each loop or chain is the finding.

The gender sections read the evidence through the Gender at Work framework (Rao and Kelleher, 2005; Rao et al., 2016), which looks for change in four places: individual consciousness and capability, access to resources, informal norms and deep structure, and formal rules and policies.
Tenure, forest rights and women's names on land titles were recorded unevenly across the four states. The next round of assessments should record them in every village.

[1] Readers interested in learning more about the LCAT process, facilitation approach or assessment methodology may contact the LCAT team at Transform Rural India.

Transform Rural India

Chhattisgarh

What Twenty-Five Villages Read in Their Own Landscape

Findings from twenty-five villages on the Bastar Plateau and the Chhattisgarh Plains.



CHAPTER FOUR

Chhattisgarh: What Twenty-Five Villages Read in Their Own Landscape

Findings from twenty-five villages on the Bastar Plateau and the Chhattisgarh Plains.

AT A GLANCE	
25 villages	Fifteen on the Bastar Plateau (Bastar, Dantewada, Kondagaon) and ten in the Plains (five in Kanker, five in Dongargaon block of Rajnandgaon).
25 of 25	villages report falling groundwater, declining wildlife and a declining sensory landscape. In 9 of the 12 that gave a then-and-now depth, water now lies three or more times deeper than elders remember.
24 and 25	villages rate infrastructure and community institutions, respectively, as improving.
Heat	The state's leading hazard (CEEW, 2026a). All 25 village reports record hotter summers.
782 actions	in the 25 climate-integrated GPDP drafts. Communities can take up 148 with their own labour and decisions, and SHGs lead or co-lead 406.

4.1 Context

4.1.1 A forest state in three storeys

In all 25 Chhattisgarh villages, people report falling groundwater, declining wildlife and a landscape that looks, sounds and feels worse than it did; in 24 of them they also report better roads, homes, power and services. Choknar kept its own borewell record: water at 90 feet in April 2024, 115 feet in February 2025 and 120 feet by April 2025. Assured paddy procurement has lifted incomes and moved farmers away from millets and pulses towards a crop that needs more water and deeper borewells. In Tumdibod, residents' own forecast is that 'the village will become like a desert'. The villages have the institutions to respond: about 508 self-help groups in the 23 villages that gave a count, and 15 villages that could begin community-level work now.

Chhattisgarh is one of India's most forested states, with about 44 per cent of its area recorded as forest (FSI, 2019). Of its 2.55 crore people, 76.8 per cent live in villages and 30.6 per cent belong to Scheduled Tribes, among them Gond, Baiga, Halba and Muria communities whose food, livelihoods and beliefs are tied to the forest (Census of India, 2011a). Tendu leaf, mahua, honey, lac, mushrooms and firewood are part of the household economy across the north and south of the state.

State planners read the territory as three agro-climatic zones (Figure 4.1). The Northern Hills are forested plateaus with about 1,400 mm of rain, lateritic soils that shed water quickly, and roughly 11 per cent of the sown area irrigated.

The Chhattisgarh Plains, the "rice bowl", receive about 1,200 mm, see temperatures swing from 12°C to 42°C and irrigate about 43 per cent of their sown area. The Bastar Plateau is the wettest zone, with about 1,600 mm of rain and a growing period of up to 120–130 days, yet only about 5 per cent of its sown area is irrigated (TRI, 2026c). Its farming depends almost entirely on the monsoon arriving on time.

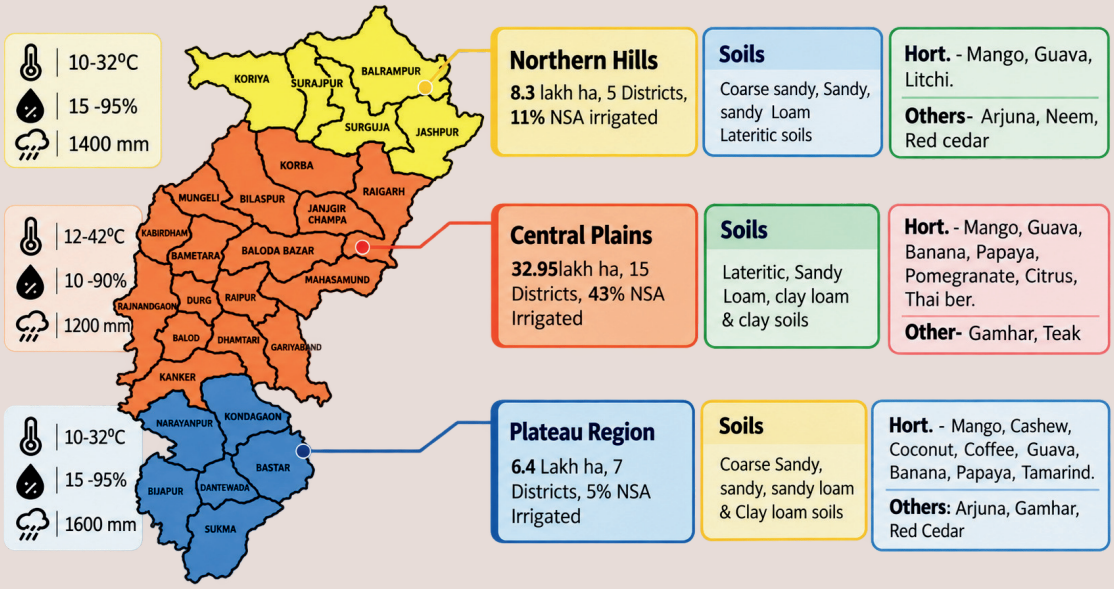


Figure 4.1: Agro-climatic zones of Chhattisgarh, with temperature range, rainfall, irrigated share, soils and horticulture potential for each zone. The assessed villages lie in Bastar, Dantewada and Kondagaon (Bastar Plateau) and in Kanker and Rajnandgaon (Chhattisgarh Plains). Map from the TRI compilation of state agro-climatic data, drawn on the earlier district configuration (TRI, 2026c).

The assessment cover two of the three zones. Fifteen villages are on the Bastar Plateau, in Bastar, Dantewada and Kondagaon. Ten are in the Plains: five in Kanker, which sits where the plains rise towards the plateau, and five in Dongargaon block of Rajnandgaon. The Northern Hills are not yet covered.

4.1.2 Climate variability and the outlook

The state's own planning documents record a decline in rainfall over the second half of the twentieth century and a recent pattern of variability that brings both droughts and floods (Government of Chhattisgarh, n.d.). The warming trend is now well documented. CEEW's CRAVIS platform, built on more than forty years of IMD and IITM data, places the state's average annual temperature at 26.0°C for 1981–2010 and 26.1°C for 2011–2024. Under a high-emissions pathway (RCP 8.5) it projects 27.9°C for 2031–2050 and 28.8°C for 2051–2070, with the pace of warming rising from about 0.15°C to about 0.6°C per decade (Figure 4.2; CEEW, 2026a).

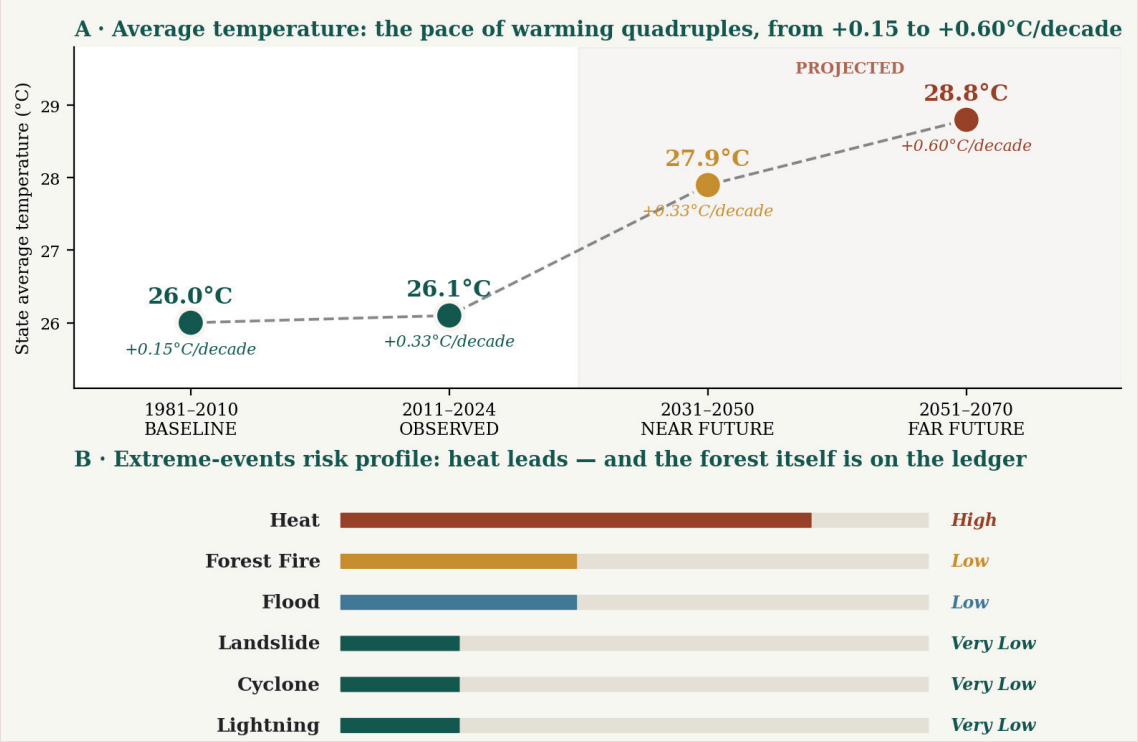


Figure 4.2. Temperature trajectory and extreme-events risk profile for Chhattisgarh under RCP 8.5, redrawn from the CRAVIS state dashboard (CEEW, 2026a; TRI, 2026c). Values are unweighted district averages as displayed on the dashboard.

CRAVIS rates heat as the state's leading hazard, forest fire and flood as low, and cyclone, landslide and lightning as very low. For a forest state, the presence of fire on that list matters. The produce on which forest households depend, including tendu, mahua, honey and lac, faces more frequent fires, heavier pest and disease attack and weaker regeneration of key species (Government of Chhattisgarh, n.d.). The villages describe these same changes from the ground (Table 4.1).

Table 4.1. Extreme events: the state outlook set against what villages already report. Village evidence from TRI (2026a).

Hazard	State outlook	What villages already report	Most exposed
Heat and warm nights	Leading hazard; warming expected to accelerate (CEEW, 2026a)	Hotter summers in all 25 reports; nights too warm to sleep in cement homes (Barchegondi); a harsher loo (Cha Tolagaon); heat felt more since streams dried (Vanusari)	Outdoor workers and forest-produce collectors; women cooking and fetching water; elderly-only households; infants

Hazard	State outlook	What villages already report	Most exposed
Erratic monsoon, dry spells and drought	Droughts likely to become more frequent (Government of Chhattisgarh, n.d.)	Rain that once spread over four to five months now comes shorter and heavier (Hidpal); dry-spell stress in August–September (Chinchdongari); millets given up as rainfall changed (Choknar); the 1982 famine is still remembered (Chinchdongari)	Rain-fed smallholders, above all on the Plateau where about 5% of land is irrigated
Intense rain and floods	Rated low statewide, but recurring locally	Floods in 2025 in Kohkapal, Ghotpal and Hidpal; Indravati floods at Bade Panera and Chindnaar; a river that cuts off Cha Tolagaon almost every monsoon	Riverside farmers; hamlets without all-weather roads or bridges
Fire, pests and weaker regeneration	Growing pressure on forest produce (Government of Chhattisgarh, n.d.)	Fire named as a cause of forest loss in six villages; mahua, tora and chironji yields falling; Bargaon farmers link new pest outbreaks to climate	Households relying on forest produce (82–100% of households in six Plateau villages); women, who lead collection
Groundwater stress	Most blocks assessed as safe; hard-rock aquifers vary locally (CGWB, 2025)	Water three or more times deeper in 9 of 12 villages with long-run figures (Section 2.2)	Smallholders without borewells; remote hamlets; women and girls who fetch water

4.1.3 Why vulnerability here is easily under-counted

Chhattisgarh ranks low on CEEW's Climate Vulnerability Index, with a score of 0.087 and a rank of 26 among 35 states and union territories (Mohanty and Wadhawan, 2021). That index is built around acute events such as floods, cyclones and droughts. The state's burden is mostly chronic: rising heat, variable rain on rain-fed paddy, and a forest economy that regenerates a little less each year. Other lenses read higher. CEEW's health assessment places more than half the state's districts in the high category for climate hazard (CEEW and UNICEF, 2025). The share of people who are multidimensionally poor fell from 29.9 per cent in 2015–16 to 16.4 per cent in 2019–21 (NITI Aayog, 2023), yet poverty remains highest in the forested tribal districts of the south, and the poverty map, the forest map and the tribal map of the state still largely overlap.

4.1.4 Method: treating memory as evidence

Five villages were chosen in each district. Sessions brought elders, women, men and youth together in the village, in Hindi, Chhattisgarhi, Halbi, Bhatri and other local languages, mostly in April and May 2026. Where attendance was counted, women made up more than half of those present.

In the Dantewada villages the Gram Sabha formally validated the findings. The outputs are 25 village landscape reports and 25 climate-integrated GPDP drafts, each with a three-tier action plan (TRI, 2026a; 2026b).

4.2 Landscape trends and paradoxes

4.2.1 Key trends across the eight Jeevan Tatva

Water, wildlife and the look, sound and feel of the landscape declined in all 25 villages, while community institutions improved in all 25 and infrastructure in 24 (Figure 4.3; Table 4.2). The two themes that improved, Infrastructure & Economic Factors and Community & Governance, are where public programmes and women's collectives have been most active: roads, homes, electricity, tap connections, self-help groups and women's representation. The six that declined concern natural and cultural systems that no single programme looks after as a whole: soil, groundwater, forest and wildlife, festivals and shared knowledge, and the look, sound and smell of a place.

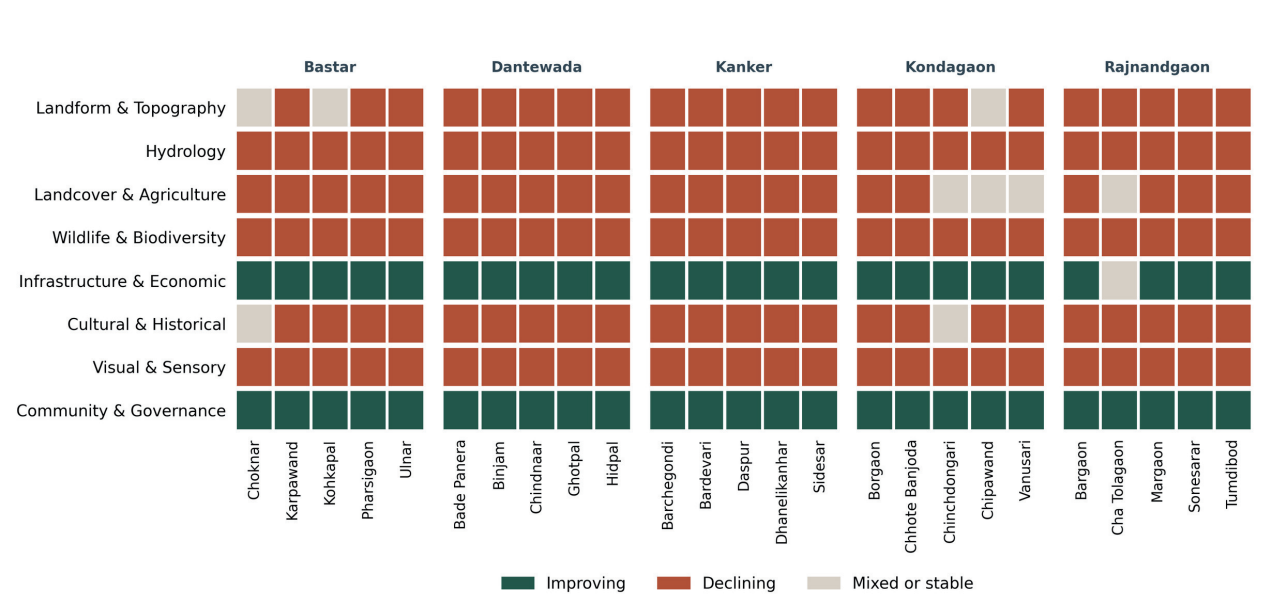


Figure 4.3. Trend direction for each Jeevan Tatva theme, by village and district, in three categories: improving, declining, and mixed or stable. Source: TRI (2026a).

Table 4.2. The eight themes, using each report's own trend direction. Source: TRI (2026a).

Theme	Improving	Declining	Mixed or stable	What the reports say
Landform & Topography	0	22	3	Land levelled and hills cut for farming (Binjam, Hidpal, Ghotpal); commons converted to fields; Choknar, Kohkapal and Chipawand record the landform itself as largely stable
Hydrology	0	25	0	Groundwater falling; ponds, streams and wells drying earlier; floods alongside dry seasons; piped connections awaiting reliable source water in some villages
Landcover & Agriculture	0	21	4	Paddy replacing millets and pulses, rising chemical use, soil hardening; Hidpal uses no chemical fertiliser; Chinchdongari and Vanusari "stable but vulnerable"
Wildlife & Biodiversity	0	25	0	Forest thinning; vultures, peacocks and deer rarely seen; bears, monkeys and wild boar entering fields in 15 villages
Infrastructure & Economic	24	0	1	Roads, pucca homes, electricity, tap water and scheme access; Cha Tolagaon records "mixed" because of factory runoff and rising plastic
Cultural & Historical	0	23	2	Festivals shortened, traditional knowledge thinning; in Choknar and Chinchdongari sacred groves and festivals remain active
Visual & Sensory	0	25	0	Hotter days, fewer birds, more dust and plastic; the smell of wet soil after first rain has faded
Community & Governance	25	0	0	More SHGs, women in panchayat posts and Gram Sabhas, better access to schemes

The exceptions show what makes a difference. Chinchdongari and Vanusari in Kondagaon record only slight decline; both still have forest-dependent households, working ponds and, in Vanusari, two community-managed solar lift irrigation systems. Hidpal's farmers report that new farm ponds and recharge pits already keep water in the village longer. In Sonesarar, farmers returned to arhar, chana, masoor and mustard this year once the cooperative society began buying rabi crops at a support price. Where the pattern softens, a public programme or a community initiative is usually behind it.

4.2.2 Groundwater: the fastest-moving signal

Water is where change is fastest and most measurable. Fourteen villages gave a depth, and twelve gave both then and now; in 9 of those 12, water now lies three or more times deeper than elders remember (Figure 4.4). Choknar kept its own record: 90 feet in April 2024, 115 in February 2025 and 120 by April 2025. In 12 villages, residents also noted that borewells mostly serve larger farmers, while smallholders and remote hamlets depend on shared sources.

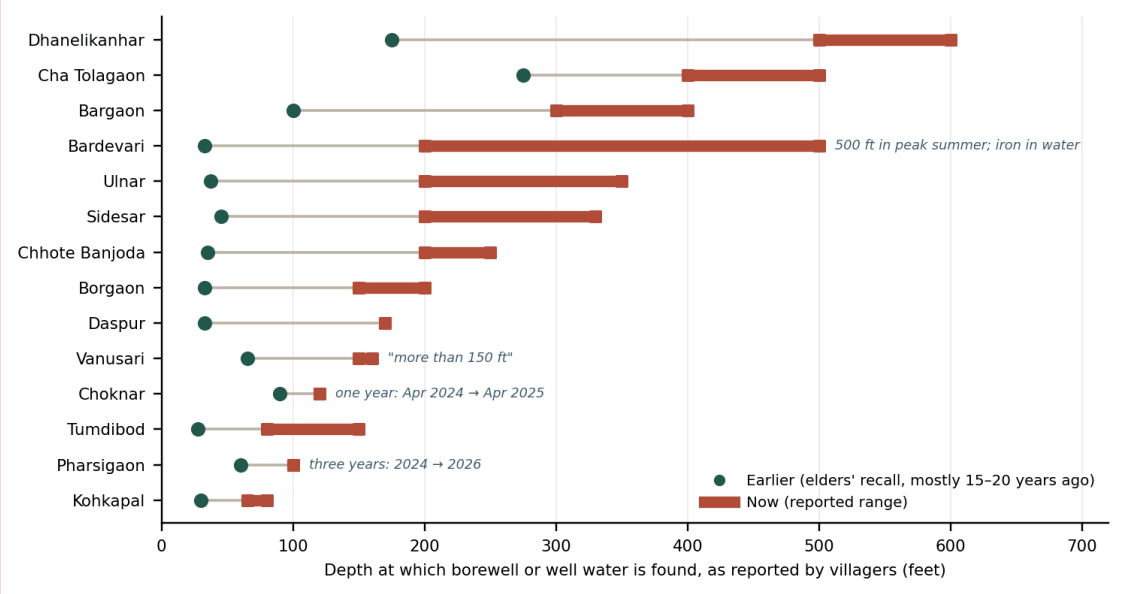


Figure 4.4. Depth to water reported by villagers in the 14 villages that gave figures. Earlier values are elders' recall, except Choknar and Pharsigaon, which recorded recent readings. Source: TRI (2026a).

Deeper drilling has also brought new water: iron in Bardevari's borewells and salt in Karpawand's.

> *"Every household has drilled a borewell now, but the water tastes of iron."*
> Village resident, Bardevari

Block and village readings complement each other. The Central Ground Water Board's 2024 assessment classifies 120 of the state's 146 blocks as safe, 21 as semi-critical and 5 as critical, with about 47 per cent of extractable groundwater in use (CGWB, 2025). About 87 per cent of the state lies on hard rock, where water is held in small fractured pockets that can run down in one village while the block average stays comfortable. Village water budgets, and a few observation wells in Gram Panchayats, would link the two scales.

4.2.3 Transitions in tension

Table 4.3. Transitions in tension. Source: TRI (2026a).

Tension	What villagers described	Where	Opportunity
Connections ahead of source water	Tap connections now reach most homes. In some villages source water has not kept pace, so women return to public taps; Daspur's supply also serves Kanker town while its upper hamlet runs short in summer.	Chindnaar, Borgaon, Sidesar, Daspur	Pair each piped scheme with recharge works in the same village under VB-G RAM G.

Tension	What villagers described	Where	Opportunity
Higher incomes, narrower diets	Assured paddy procurement has lifted incomes. Families also describe buying back ration rice and market oil in place of millets and home-pressed oils; Bardevari links this to anaemia.	Bardevari, Barchegondi, Daspur, Dhanelikanhar	Extend the state's millet and pulse support and bring millets into local meals.
Durable homes, warmer nights	Pucca homes are safer and valued; residents note that cement holds the day's heat and that shade trees have thinned.	Barchegondi, Ulnar, Kohkapal	Shade planting and heat-aware design within housing programmes.
Committees without a forest	Sidesar has no forest land; Daspur's forest committee became inactive as the forest shrank to 1.72 hectares.	Sidesar, Daspur, Rajnandgaon villages	Restore first and revive committees around the restored patch.
Markets nearby, processing far	14 villages have a weekly haat within 2 km, but only 2 have storage and 4 process any forest produce.	Most villages	Village-level drying, storage and first processing.
Skills that travel	Young men from Borgaon and Daspur find work drilling borewells in other states.	Borgaon, Daspur	Local green jobs in recharge and solar maintenance that use the same skills.

Assured paddy procurement has raised incomes while families buy back ration rice in place of the millets they once ate.

> *"We grow organic and send the good food outside, but we buy chemical-grown grain from the ration shop and eat that ourselves. That is why the whole village has to work on this together."*
> Village resident, Barchegondi

Where the forest has shrunk, the institution that protected it has gone too: Daspur's forest committee lapsed as its forest fell to 1.72 hectares (Table 4.3).

> *"When there was forest, there was a committee. If we protect the trees and plants, our committee will come back to life."*
> Village resident, Daspur

4.2.4 Four systems loops that recur across the state

The reports describe four self-reinforcing loops, and the first three feed one another: assured paddy drives deeper borewells, fewer cattle leave the soil without manure, and a thinning canopy pushes farmers further towards paddy, while shared work gives way to individual fixes (Figure 4.5).



Figure 4.5. Four state-level systems loops. R = reinforcing loop. Counts show the number of village reports (of 25) that record each link. Source: research team synthesis of TRI (2026a).

The paddy–borewell cycle. Assured procurement has made paddy the most dependable crop for many farmers: the state buys up to 21 quintals an acre at ₹3,100 a quintal, among the most supportive paddy prices in the country (The Hitavada, 2025; 2026). Fifteen reports connect this assurance with the move away from millets and pulses. Paddy needs more water, which means more and deeper borewells, and as shallow wells and ponds dry, farmers without a borewell find it hard to take a second crop. In Sidesar a family that once took two crops now takes one, and the sons look for work in the city.

The manure gap. Tractors replaced bullocks and grazing land shrank, so cattle numbers fell: from about 650 animals to 150 in Dhanelikanhar, and from cattle in every household to 30–40 of 227 in Sidesar. Less dung means more urea and DAP; farmers in Chhote Banjoda describe one sack of fertiliser one year and two the next. Hardened soil sheds rain instead of absorbing it, which feeds back into the water cycle.

> *"The soil has become hard; it no longer drinks the water."*
> Village elder, Ghotpal; the same words were used in Chhote Banjoda

The thinning canopy. As forests thin, bears, monkeys and wild boar come into fields in 15 villages. In Margaon, Sonesarar and Tumdibod, farmers say they gave up pulses and millets because these need guarding from monkeys and stray cattle, while paddy withstands them. Forest loss thus nudges farmers towards the crop that needs the most water.

> *"Earlier we saw tigers, leopards and vultures in the forest. Now that the forest is ruined, bears and monkeys come towards the village looking for food."*
> Village elder, Dhanelikanhar

From shared labour to individual fixes. Twenty-four reports describe a move from collective to individual ways of managing water, land and forest. In Chipawand the Bethiya custom of building homes and paths together in return for a meal has ended. The same villages also hold the counterweight: Margaon cleaned its Khamba Talab through shramdaan, Cha Tolagaon deepened two of its three ponds, which now hold clean water, and fourteen villages proposed shramdaan in their own plans.

> *"Earlier, people repaired the ponds, grazing land and paths together. Now they wait for the Panchayat budget for every small job."*
> Community response, Bargaon

4.3 Green value chains and the rural bioeconomy

4.3.1 Ten opportunities named by communities

Organic inputs and millets and pulses are each named in 24 of the 25 reports and already have state support or buyers; what they lack is village-level processing and working capital (Table 4.4).

Table 4.4. Ten green value chains named by communities, described against the six readiness factors. "Villages" = number of village reports listing the chain; for tree-based enterprises, lac appears in 5 lists, honey in 5 and bamboo in 12. Source: TRI (2026a; 2026b).

Value chain	Villages	Resource base and existing institutions	Market link and scheme hook	Women's role and climate co-benefit
ENERGY TRANSITION				
Solar irrigation, including community lift from rivers and ponds	17	Two community-managed lift systems in Vanusari; solar pumps in Kohkapal, Choknar and Borgaon; Mahanadi lift proposed in Sidesar	Rabi vegetables for nearby haats; PM-KUSUM, CREDA	Replaces diesel; group ownership lets women and smallholders share; best paired with a village water budget
Solar dryers and cold storage	12	Tamarind, mahua and vegetables sold undried or fresh; storage houses in Karpawand; seed store in Tumdibod	Better prices off-season; PMFME, Van Dhan, NABARD	SHG-run units; cuts post-harvest loss in hotter summers
Straw briquettes and biogas	12	Paddy straw burnt in six villages; three gobar gas plants in Vanusari ready for repair	Household and local demand; GOBARdhan (SBM-G)	Less fuelwood carrying and kitchen smoke; avoids residue burning

Value chain	Villages	Resource base and existing institutions	Market link and scheme hook	Women's role and climate co-benefit
CIRCULAR ECONOMY				
Organic inputs: vermicompost, compost, bio-inputs	24	Gauthan sites; SHG vermicompost in Karpawand and Vanusari; NADEP composting in Chinchdongari; Hidpal farming without chemicals	Own use and sale to neighbours; natural farming mission, RKVY	SHG income; restores soil life and water absorption
Paddy-straw mushrooms, fodder and feed	21	Straw abundant everywhere; SHG mushroom units in Karpawand	Strong local demand (Sidesar); BIHAN, MIDH	Women-led; keeps residue out of the fire
Waste enterprises and leaf plates	20	Swachhata Didis in Margaon, Sonesarar and Cha Tolagaon; SHG plastic collection in Chinchdongari; leaf-plate units in Ulnar and Bardevari	Scrap dealers, festival demand; SBM-G Phase II	Women-led; reduces plastic burning and revives sal-leaf craft
NATURE-BASED SOLUTIONS AND BIOECONOMY				
Millets and pulses, grown, processed and eaten locally	24	Ragi still grown widely; five millets in Vanusari; rabi pulses back in Sonesarar; seed store in Tumdibod	State buys kodo and kutki at ₹30/kg and ragi at ₹33.77/kg (Vikaspedia, n.d.); rabi pulses via cooperatives	Women's nutrition knowledge; low water need
Forest produce value addition: mahua, tamarind, chironji, sal seed	21	Five SHG tamarind units (Karpawand); tamarind candy (Dhanelikanhar); mahua and karanj oil by women (Borgaon)	CG MFP Federation, Van Dhan, TRIFED	Women lead collection; income that rewards protecting trees
Fisheries in restored ponds	22	32-member SHG fishery (Margaon); fishery cooperative using 5 of 6 ponds (Barchegondi)	Fish now bought from markets; PMMSY; VB-G RAM G pond works	Restored ponds also recharge groundwater
Tree-based enterprises: lac, honey, bamboo, fruit	22	Cluster lac centre near Sidesar; mango orchards in Binjam; bamboo plantation in Borgaon	Established lac and fruit markets; CAMPA, National Bamboo Mission	Adds shade and canopy; long-term carbon

The most widely named chains (organic inputs, millets and pulses, forest produce) already have state support or buyers in place; the step still missing is village-level processing and working capital. The energy chains have strong resource bases but few operators yet, so they will need a local enterprise or SHG to run them from the start. And solar pumping works best with water rules: communities themselves favoured lifting from rivers and ponds, as in Sidesar's Mahanadi proposal and Vanusari's lift systems on the Narangi, with group ownership so that women and smallholders share the benefit.

4.3.2 Distinctive demands from across the state

Bardevari's Gram Sabha has proposed a Water Pact to pause deep drilling, and Barchegondi wants the vultures back (Table 4.5).

Table 4.5. Distinctive community demands. Source: TRI (2026a; 2026b).

Theme	Demand	Village	What it tells planners
Water	A Gram Sabha Water Pact to pause deep drilling, with well recharge (Kua-Bharna) and riverbank fencing with bamboo and vetiver (Mair-Bandi)	Bardevari	Communities are ready to set rules for their own groundwater
Water	Solar lift irrigation from the Mahanadi in place of more borewells	Sidesar	A shift from groundwater to surface water, proposed from below
Safety	A bridge or embankment for the river that floods almost every year	Cha Tolagaon	Flood safety also means access to school, market and college
Wildlife	"Bring the vultures back": pesticide-free buffers and jamun planting in the community forest to reduce crop raids	Barchegondi	Biodiversity recovery named as a village goal
Forest	Save Mavali Hills through contour bunds, planting and regulated felling for brick kilns	Dhanelikanhar	A landmark hill as the unit of restoration
Forest	Fines for tree-felling and bird-hunting, and a Van Dhan Samiti to protect Bija trees and herbs	Chhote Banjoda	Community rule-making for shared forests
Wildlife	Fewer heavy machines and vehicles, which residents link to the loss of peacocks	Chinchdongari	Noise and pollution read as ecological harm

Theme	Demand	Village	What it tells planners
Culture	Revive Rela songs and Bethiya-style shared work; community-led visits to seven sacred groves	Chipawand	Culture as the base for collective action
Culture	A plastic-free festival rule using leaf plates, upheld by the PESA committee	Barchegondi	Customary institutions taking on new problems
Heat	Replant peepal and banyan at gathering places; revive mud-and-bamboo building	Sidesar, Sonesarar	Shade and traditional design as heat adaptation
Wellbeing	End home brewing of liquor; an ambulance at the Panchayat	Daspur	Health and social concerns sit beside ecological ones
Tenure	Collective filing of pending forest rights claims for 170 households	Vanusari	Secure tenure as the base for forest livelihoods

4.3.3 Who bears the change

Water scarcity is the burden the reports tie to the most groups: women and girls who fetch, elderly-only homes on irregular supply, sons who leave when two crops become one, and smallholders without a borewell (Table 4.6).

Table 4.6. Who bears which burden. Dark shading = named strongly or in several villages; light shading = named in one or two; grey = not recorded. Source: TRI (2026a). "Not recorded" means the reports are silent, not that the burden is absent.

Burden	Women	Elderly	Children	Youth	Landless and smallholders
Heat	Nights too warm to sleep (Barchegondi); heavier work in heat (Tumdibod)	Named with children as most affected by warm nights (Barchegondi)	As for elderly (Barchegondi)	-	-
Water scarcity	**Fetch from public taps; filter and heat river water (Borgaon, Choknar); named in 9 villages**	**Elderly-only homes get irregular supply (Hidpal); iron and typhoid risk (Bardevari)**	**Girls fetch water (Borgaon); water-borne illness (Dhanelikanhar)**	**Sons migrate when two crops become one (Sidesar)**	**Borewells mostly serve bigger farmers in 12 villages**
Fuelwood	**Longer walks in 8 villages**	-	-	-	**Little common land left to graze or gather (Bargaon, Sidesar)**

Burden	Women	Elderly	Children	Youth	Landless and smallholders
Chemical exposure	Women affected during field work (Daspur)	-	River fish gone; water quality concerns (Dhanelikanhar)	Link breathing problems to plastic burning (Chinchdongari)	Farmers link illness to fertiliser and pesticide (Kohkapal, Barchegondi, Borgaon, Dhanelikanhar)
Knowledge loss	Leaf-plate craft, forest foods and herbs fading (Kohkapal, Chhote Banjoda)	Elders' counsel less sought (Kohkapal, Ghotpal, Tumdibod)	River swimming and outdoor play giving way to phones (Kohkapal, Sidesar)	Rela songs rarely carried under forty (Chipawand); addiction a concern in 11 villages	-

Heat is the burden the reports describe most vividly, and cement homes carry it into the night.

> *"We grow organic and send the good food outside, but we buy chemical-grown grain from the ration shop and eat that ourselves. That is why the whole village has to work on this together."*
> Village resident, Barchegondi

Three further groups need attention. Elderly-only households form a large share in three Kondagaon villages: 87 of 202 households in Chhote Banjoda, 87 of 290 in Chinchdongari and 115 in Chipawand. Landless households are fewer but recorded (25 in Choknar, 9 in Ghotpal). And youth addiction, linked in Daspur and Dhanelikanhar to liquor brewed at home, came up in 11 villages as a concern that sits beside the ecological ones.

4.3.4 Gender and the changing landscape

For women in these villages, the last twenty years have brought two changes that pull in different directions. Their public standing has risen: women run self-help groups, hold sarpanch and panch posts, go to banks, earn wages and, in Sidesar, ride their own scooters. Their daily workload has not eased to the same degree, because water, fuel and food still fall mainly to them, and in several villages all three now take more effort to secure.

> *"We grow organic and send the good food outside, but we buy chemical-grown grain from the ration shop and eat that ourselves. That is why the whole village has to work on this together."*
> Village resident, Barchegondi

Table 4.7 reads the evidence through the Gender at Work framework (section 3.7).

Table 4.7. The Gender at Work framework applied to the 25 villages. Framework: Rao and Kelleher (2005); Rao et al. (2016). Evidence: TRI (2026a; 2026b).

INDIVIDUAL	
Consciousness and capabilities · informal Changed: women who were "once afraid to speak" now raise their voices in every meeting (Chinchdongari); women formed the majority at the assessments in Kohkapal and Cha Tolagaon. Still emerging: women in Sidesar are still hesitant to speak before elder men (siyan); women's own ecological knowledge (herbs, mahua and karanj processing in Borgaon) is seldom recognised as expertise. Next step: train women as facilitators of the Community-led Character Assessment Tool and keepers of the village sentinel record.	Access to resources · formal Changed: SHG credit across about 508 groups; wage work; in Margaon SHG members pooled ₹10,000 for a member's heart surgery. Still emerging: borewells and pumps follow land ownership, and the reports do not record titles by gender; when taps fail, water-fetching returns to women and girls. Next step: joint land and forest titles; group-owned solar pumps; count working taps alongside connections.
SYSTEMIC	
Norms and deep structure · informal Changed: women's collectives are now the village's main delivery arm; SHGs lead or co-lead 406 of the 782 plan actions. Still emerging: water, fuel and food remain women's work; herb loss is sometimes attributed to women gatherers rather than to fuelwood need; liquor and addiction weigh most on women and children. Next step: paid stewardship days through VB-G RAM G; a Gram Sabha commitment to share water and fuel work within households.	Rules and policies · formal Changed: women hold the sarpanch post in at least six villages; the state's PESA Rules include a share for women in Gram Sabha membership (Government of Chhattisgarh, 2022); Barchegondi's forest committee has 6 women among 13 members. Still emerging: most schemes are designed at household or landowner level, and climate actions in the GPDP drafts carry no gender tag yet. Next step: gender-tag the climate-integrated GPDP; a women's quorum for water and forest resolutions.

The norms quadrant holds the main lesson. The GPDP drafts give SHGs a lead or shared role in half of all actions, from pond desilting to plastic collection to forest-produce processing. That reflects well-earned trust in women's collectives.

4.4 Community indicators and critical parameters

4.4.1 What villagers know: memory as a planning resource

Village names are themselves a record: Borgaon is 'the village of ber trees' in Halbi, Bargaon is named for its banyans, and Vanusari for its forest (Table 4.8).

Table 4.8. Knowledge the villages hold. Source: TRI (2026a).

Kind of knowledge	Examples from the reports	How planning can use it
Place names as ecological record	Borgaon, "village of ber trees" in Halbi; Bargaon, named for its banyans; Vanusari, from van (forest); Pharsigaon, after the pharsi wood-cutting tool; Barchegondi, "the forest-edge village"; Chinchdongari, the deity Bhima's footprints on a forested hill; Tumdibod, from the bottle-gourd vessel	A name records what the landscape was; restoration targets can begin there (ber in Borgaon, banyan in Bargaon)
Ecological calendars	Mahua in March–April, tamarind February–April, tendu May–June (Vanusari); forest produce February–June (Chinchdongari); Diyari after the paddy harvest (Hidpal); Hareli, Nawakhai and Madai	Schedule wage work outside collection seasons; treat shifts in flowering as early warning
Customary stewardship	Sacred groves (8 in Chhote Banjoda, 7 in Chipawand, sal groves in Vanusari); Gayta and Pujari; Devgudi; Ghotul (Daspur); Bethiya shared labour (Chipawand); a dispute committee renewed each year (Borgaon)	Recognise groves and institutions in the GPDP, Biodiversity Management Committees and People's Biodiversity Registers
Water, building and material knowledge	Shallow jhariya and chuwa water pits (Borgaon, Ghotpal); tumdi gourd water carriers (Hidpal); mud houses that stayed cool (Sonesarar, Ulnar); plates from sal, siali and sanhari leaves	Design cues for low-cost water and heat-safe housing
Food and medicine	Chapda chutney, bore baasi, pej, kosra roti, mahua laddu, tikhur kheer and bamboo shoot (Binjam, Hidpal); boda mushroom, kanda and forest herbs (Choknar, Kohkapal); mahua and sal seed oils (Ulnar)	Nutrition programmes and SHG food enterprises
Community diagnosis	"Rats go to the paddy stores, so snakes follow" (Barchegondi); heat felt more once streams dried (Vanusari); trees cut, so rain runs off (Chipawand); the 4Js of water, forest, land and animals as one system (Kohkapal)	Treat as baseline hypotheses for monitoring and research
Local records and forecasts	A borewell log kept since April 2024 (Choknar); the 1982 famine (Chinchdongari); "the forest will be halved" (Borgaon); "the village will become like a desert" (Tumdibod)	Village-owned early warning; test forecasts against official data
Local names for solutions	Kua-Bharna (well recharge), Mair-Bandi (riverbank fencing), Sahi-Kheti (mixed cropping), Beej-Ghar (seed house), Badi (kitchen garden), Shramdaan (Bardevari)	Name GPDP works in the community's own terms to build ownership

4.4.2 Sentinel indicators and sensory findings

Fish, prawns and crabs no longer live in Choknar's paddy fields and are now bought in the market (Table 4.9).

Table 4.9. Community sentinel indicators. Source: TRI (2026a).

What villagers watch	What has changed	Where	What it signals
Depth at which water is struck	Three or more times deeper in 9 of 12 villages	14 villages (Figure 4.4)	Village-scale aquifer stress
Month the ponds run dry	February or March; in Sidesar 1 of 14 ponds lasts the year	Bardevari, Sidesar, Choknar	Lost surface storage
Smell of wet soil after first rain	Faded	Barchegondi, Dhanelikanhar, Margaon	Declining soil life
Earthworms	Fewer or gone	Kohkapal, Ghotpal, Daspur, Ulnar, Barchegondi	Falling soil organic matter
Vultures, peacocks, sparrows, koel	Rarely seen or heard	Barchegondi, Daspur, Borgaon, Sidesar, Margaon	Pressure on food chains and habitat
Fish, prawns and crabs in paddy fields	Gone; now bought in the market	Choknar	Household protein lost
Distance walked for bamboo	From 2–3 km to 8–10 km	Hidpal	Forest regeneration
Taste of rice, dal and vegetables	Described as less flavourful	Chipawand, Sidesar, Cha Tolagaon	Food quality concerns
Iron or salt in drinking water	New	Bardevari, Karpawand	Deep drilling into poorer strata

4.4.3 Critical parameters for the state-wide view

Table 4.10. Critical parameters. Village evidence from TRI (2026a; 2026b); state figures as cited.

Parameter	What the 25 villages show	What it suggests
Heat	All 25 reports record hotter summers. Cement homes hold heat and need more electricity (Ulnar); nights too warm to sleep (Barchegondi); shade trees lost at gathering places (Sidesar); heat felt more since streams dried (Vanusari).	Village heat plans: shade planting, cool rooms at anganwadis, work timing for outdoor labour.

Parameter	What the 25 villages show	What it suggests
Extreme weather events	Floods in 2025 in Kohkapal, Ghotpal and Hidpal; Indravati floods at Bade Panera and Chindnaar; an annual flood at Cha Tolagaon; shorter, heavier rain (Hidpal); dry spells in August–September (Chinchdongari); pest outbreaks linked to climate (Bargaon).	Plan for flood and dry spell in the same year; climate-proof roads and crossings.
Climate knowledge and preparedness	Communities read change precisely (Section 5.1); Sonesarar farmers share weather and mandi updates on a Kisan Mitra WhatsApp group. Ghotpal and Chinchdongari note that no village disaster plan exists yet, and elders' knowledge is passed on less often.	Village disaster plans in the GPDP; pair local signs with forecasts; intergenerational sessions.
Water security and quality	Groundwater falling in all 25; iron (Bardevari) and salt (Karpawand) in deep borewells; water-borne illness noted in at least six villages.	Village water budgets and water-quality testing where borewells go deep.
Migration and income	Agriculture supports 70–100% of households. Seasonal migration is 1% or less in the Dantewada villages but 20–30% in Cha Tolagaon, 10–15% (mostly youth) in Sidesar and about 10% in Choknar and Ulnar. Forest produce reaches 82–100% of households in six Plateau villages.	Migration is highest where a second crop has become difficult; VB-G RAM G (from 1 July 2026, 125 days, with a water-security domain) is the main lever (Drishti IAS, 2026a).
Land tenure and forest rights	Recorded in three villages (Section 4.1).	Add tenure to the Community-led Character Assessment Tool and link the assessment to community
Health and nutrition	Anaemia and malnutrition linked to ration rice replacing millets (Bardevari); illness linked to farm chemicals in at least four villages; breathing problems from plastic burning (Chinchdongari). The nearest health sub-centre lies outside Bade Panera, Chhote Banjoda, Chipawand and Cha Tolagaon. Statewide, about 61% of women aged 15–49 were anaemic in NFHS-5 (IIPS, 2021a).	Millets in anganwadi, school and ration meals; health outreach alongside NRM work.
Household energy	LPG is spreading (Vanusari, Chinchdongari, Bargaon), while women walk further for fuelwood in 8 villages; three gobar gas plants await repair in Vanusari; grid supply is uneven in three Kondagaon villages.	Households use both fuels; track refills and fuelwood time together.
Livestock, fodder and commons	Livestock decline reported in 22 villages; grazing land shrinking or encroached; Sidesar's youth have no playground and no common space for community sheds.	Fodder plots and protected grazing on commons; restore shared spaces.

Parameter	What the 25 villages show	What it suggests
Market distance and access	14 villages have a weekly haat within 2 km; Ulnar and Dhanelikanhar are about 10 km away. Storage exists in 2 villages and forest-produce processing in 4. Mobile coverage is weak in Bade Panera, Binjam and Borgaon.	Village-level drying, storage and processing; connectivity for digital sales.
Mining and industrial activity	Chhattisgarh holds about a fifth of India's iron ore and 18% of its coal resources, including Bailadila in Dantewada and Chhote Dongar in Kanker (IBM, 2021). The villages lie outside the main mining belts; they report river sand extraction (Choknar, Bargaon, Sidesar, Dhanelikanhar), brick kilns near Mavali Hills (Dhanelikanhar), factory runoff (Cha Tolagaon) and local factory jobs (Bade Panera).	Gram Sabha oversight of minor extraction under PESA; the assessment do not describe large-mine areas.
Youth and social wellbeing	Addiction a concern in 11 villages; youth interested in local enterprises, animal husbandry and service jobs (Margaon, Tumdibod).	Green skilling and youth roles in monitoring and enterprises.
Scheme convergence and finance	Solar pump allocations have so far reached two farmers in Borgaon, where 32 water plans are ready; Barchegondi has 91 planned NRM works. Families meet health costs themselves (about ₹4 lakh for one treatment in Cha Tolagaon). In the GPDP drafts, 68% of actions rely on schemes coming together.	Converge existing schemes at village level; add working capital and local operators.

4.5 Tiered action plans

Each village's GPDP draft sorts its actions into three tiers: what the community can do alone within six months, what needs modest support within eighteen months, and what needs external finance over one to three years. Tier 1 and 2 actions feed a Community Action Plan owned by SHGs, the village organisation and the Gram Sabha; Tier 3 actions feed a departmental plan (TRI, 2026b). Across 25 villages the drafts hold 782 actions (Figure 4.6). Communities can take up 148 of them with their own labour and decisions, and SHGs lead or co-lead 406; the Gram Panchayat is named on 140 and the Forest Department on 94. Table 4.11 lists the activities that recur most often in each tier.

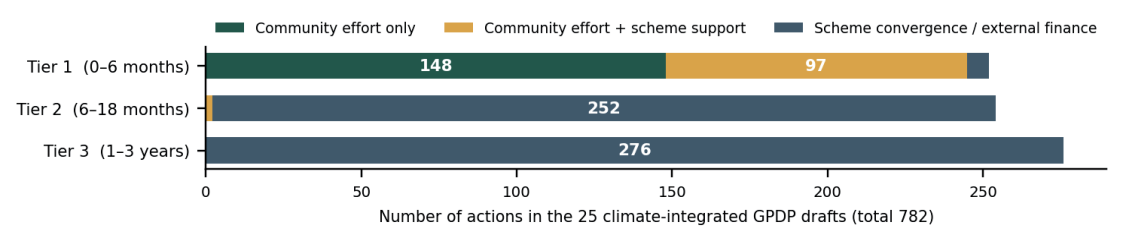


Figure 4.6. The 782 actions by tier and source of finance. Source: TRI (2026b); research team coding.

Table 4.11. Top five activities per tier. Counts come from a keyword coding of the 782 actions and are approximate; documentation of elders' knowledge (24 plans, Tier 1) and millet processing and procurement (22 plans, Tier 3) also recur. Source: TRI (2026b).

#	Activity	Plans (of 25)	Who leads	Source of support
TIER 1 · The community can do it alone · 0–6 months				
1	Shramdaan desilting of village ponds, with named pond stewards	25	SHGs, Gram Sabha	Community labour
2	Household compost and NADEP pits; an end to burning crop residue	24	SHGs, Krishi Sakhi	Community labour
3	Millet seed saving and pilot plots (a village seed house)	23	Village organisation, Krishi Mitra	Community; KVK seed
4	Gram Sabha resolutions to protect forest, groves and commons; fire lines	21	Gram Sabha, Gayta and Pujari	PESA provisions
5	Gram Sabha water rules: borewell spacing and a village water budget	19	Gram Sabha	Community decision
TIER 2 · Minor external support · 6–18 months				
1	Recharge works: farm ponds, dabri, recharge pits beside handpumps, contour trenches	24	Gram Panchayat	VB-G RAM G; PMKSY
2	SHG primary processing of forest produce: mahua drying, tamarind de-seeding, leaf plates	24	SHGs, Van Dhan groups	CG MFP Federation; Van Dhan; BIHAN
3	Vermicompost units at SHG and Gauthan sites	23	SHGs, Krishi Sakhi	RKVY; natural farming mission
4	Fisheries in restored ponds; goat and poultry revival	22	SHGs; Fisheries and Animal Husbandry	PMMSY; livestock schemes
5	Solar pump and dryer pilots, surface water first and group-owned	18	CREDA, SHG or user group	PM-KUSUM; MNRE
TIER 3 · External finance or scheme convergence · 1–3 years				
1	Ridge-to-valley watershed treatment	25	Watershed Mission, Gram Panchayat	PMKSY; State Watershed Mission; VB-G RAM G
2	Solar irrigation at scale, including community lift schemes	24	CREDA, Water Resources Department	PM-KUSUM; MNRE
3	Storage, cold chain and processing units; procurement centres	24	DRDA, MFP Federation	PMFME; NABARD; Van Dhan

#	Activity	Plans (of 25)	Who leads	Source of support
4	Native-species restoration of degraded forest and commons	24	Forest Department with Gram Sabha	CAMPA; Green India Mission
5	Recognition and management of community forest rights	16	Tribal Welfare and Forest Departments	FRA; DA-JGUA

4.5.1 What this asks of Samaj, Sarkaar and Bazaar

Table 4.12. What the findings invite from each stakeholder.

Who	What the evidence invites	A first step
Samaj: Gram Sabhas, SHGs, elders, youth	Treat water and commons as shared again; keep the sentinel record; share water and fuel work within households.	Pond shramdaan and a borewell rule before the next monsoon.
Sarkaar: Panchayat and Rural Development	Use the climate-integrated GPDP as a source of VB-G RAM G works; recognise stewardship days; gender-tag climate actions.	Include Tier 2 recharge works in the Viksit Gram Panchayat Plan.
Sarkaar: Agriculture, Food, MFP Federation	Build on the Millet Mission so that millets and pulses enjoy procurement confidence similar to paddy.	Buying points for kodo, kutki, ragi and rabi pulses within each block.
Sarkaar: Forest and Tribal Welfare	Expedite pending claims and support community forest management plans.	Community forest plans in Barchegondi, Vanusari and Bardevari.
Sarkaar: PHED, Water Resources, CGWB	Add village-scale water data to block assessments; link piped schemes to local recharge.	Village water budgets and observation wells in the Gram Panchayats.
Bazaar: MFP Federation, FPOs, processors	Buy at stated prices and locate first processing in villages.	Drying and storage run by SHG operators.
Funders and CSR	Support what schemes cover less: facilitation, working capital, operators, monitoring.	Blended finance for storage; support for women's stewardship time.

A practical starting point is Borgaon, where 32 water plans are ready but solar pump allocations have so far reached only two farmers.



Transform Rural India

Jharkhand

What Twenty-Four Villages Read in Their Own Landscape

Findings from twenty-four villages across all three agro-climatic zones of the Chota Nagpur plateau.

CHAPTER FIVE

Jharkhand: What Twenty-Four Villages Read in Their Own Landscape

Findings from twenty-four villages across all three agro-climatic zones of the Chota Nagpur plateau.

AT A GLANCE	
24 villages	In five districts and eight blocks: Ranchi (Angara, Bero) 8, Palamu (Chainpur, Satbarwa) 7, Ramgarh (Gola) 3, Simdega (Kurdeg, Kersai) 3 and West Singhbhum (Noamundi) 3. About 33,600 people live in the 16 villages that recorded a population figure.
+0.47°C per decade	Observed warming in 2011–2024, more than double the 1981–2010 pace. Heat is rated moderate and flood low at state level (CEEW, 2026b).
23 of 24	villages report declining wildlife and 19 declining water systems. Elephants now enter fields or homes in 10.
12 and 12	villages report better infrastructure and stronger community institutions respectively; the other twelve record infrastructure as mixed.
PESA rules, 2026	Notified in January 2026, giving Gram Sabhas in Scheduled Areas defined roles over forest produce, small water bodies and minor minerals (Drishti IAS, 2026b).

5.1 Context and methodology

5.1.1 A plateau of forests and minerals

Wildlife is declining in 23 of the 24 Jharkhand assessed villages, and elephants now enter fields or homes in ten, often for the first time. Water systems are declining in 19. Jharkhand departs from the other states in its institutions. Community and governance improves in only 12 villages, because as women's groups grow, the customary forums that governed the forest are thinning; in Latar Kundrijod the Van Samiti that protected the forest has lapsed. The state notified its PESA rules in January 2026, and 14 villages lie in Fifth Schedule districts, so Gram Sabhas there now hold defined powers over forest produce, small water bodies and minor minerals.

Jharkhand sits almost entirely on the Chota Nagpur plateau, a country of dissected uplands, forested ridges and valleys drained by the Damodar, Subarnarekha, North Koel and Sankh. Close to thirty per cent of its area is under forest, and beneath that canopy lies one of the country's richest mineral endowments (FSI, 2021). Scheduled Tribes make up roughly 26 per cent of the population: the Santhal in the north-east, the Oraon, Munda and Kharia across the central and western plateau, the Ho in the Singhbhum country, and several Particularly Vulnerable Tribal Groups in the remotest tracts (Census of India, 2011b).

State planners read the plateau as three agro-climatic zones (Figure 5.1). The Central and North-Eastern Plateau covers fourteen districts with about 7.12 lakh hectares of net sown area, only about 11 per cent irrigated; the Western Plateau is the most forested, with about a third of its area under forest; and the South-Eastern Plateau in the Singhbhum country has just 7.8 per cent irrigation (TRI, 2026e). Across all three, roughly nine in every ten cultivated hectares depend directly on the rain.

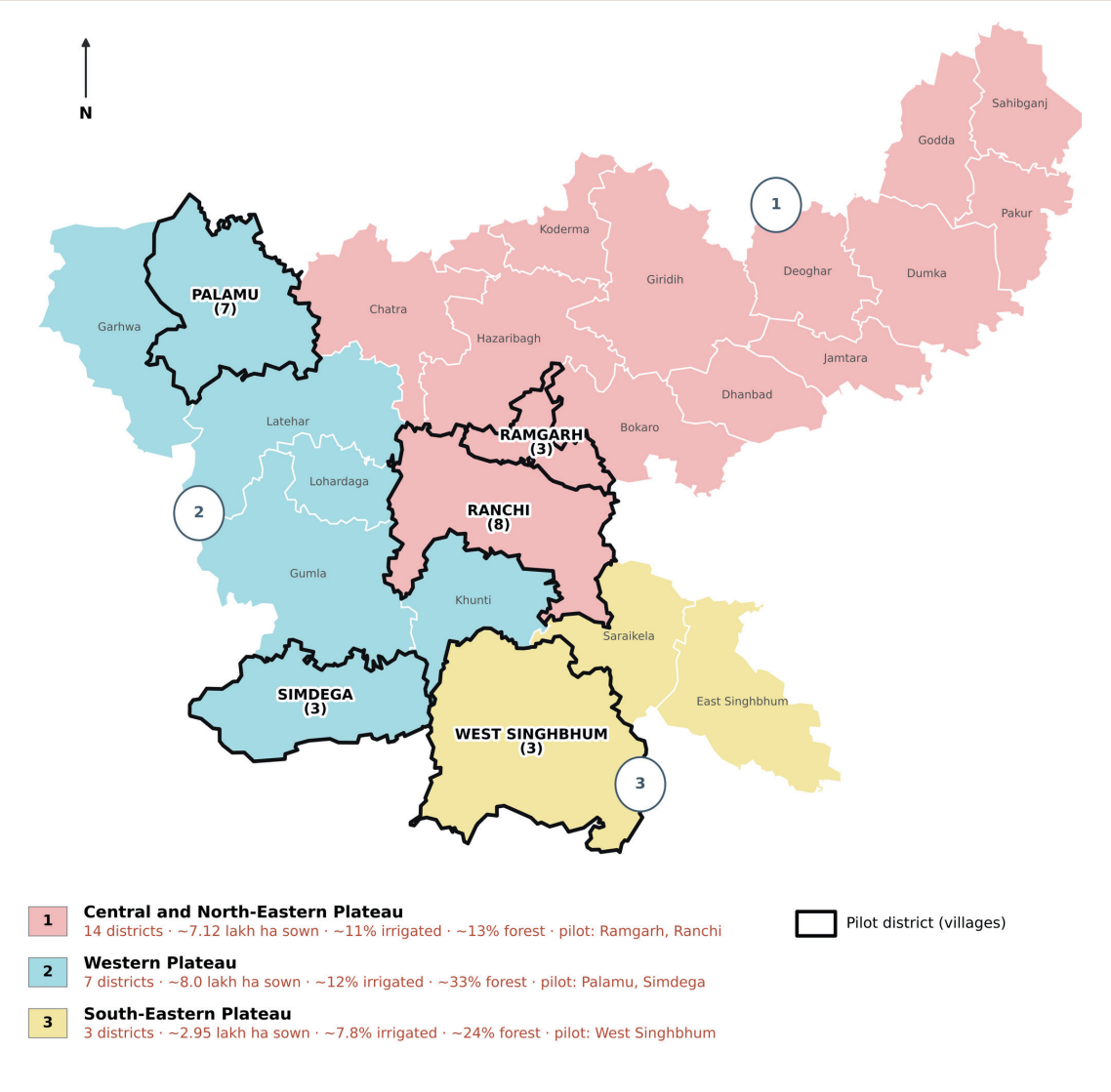


Figure 5.1. Agro-climatic zones of Jharkhand, with sown area, irrigation and forest cover for each zone and the five districts outlined. District assignments follow the TRI zone map (TRI, 2026e); Khunti is placed in the Western Plateau to match the district counts in the zone profiles (14, 7 and 3). District boundaries are from open-source data and are indicative.

The assessment cover all three zones. Eleven villages are on the Central and North-Eastern Plateau (Chatra, Nawagarh, Rajadera and Sursu in Angara; Hulsi, Kesha, Kokde and Kotpali in Bero; Chokad, Rakua and Upar Barga in Gola), ten on the Western Plateau (Basariya Khurd, Cherabar and Gurha in Chainpur; Charwadih, Ghutua, Halumad and Rabda in Satbarwa; Bangaon, Bhaibail and Rusu in Simdega) and three on the South-Eastern Plateau (Beterkia, Gaongutu and Latar Kundrijod in Noamundi, in the iron-ore belt of West Singhbhum).

5.1.2 Climate variability and the outlook

The plateau's sub-humid monsoon has commonly brought about 1,100–1,300 mm of rain a year, almost all of it between June and September (TRI, 2026e). That rhythm is loosening. CEEW's tehsil-level analysis places some of the sharpest recent declines in monsoon rainfall across eastern India, with high month-to-month variability in the eastern states; of the tehsils losing monsoon rain, about 87 per cent lost it in June and July, the window on which rain-fed paddy sowing depends (Prabhu and Chitale, 2024).

CEEW's CRAVIS platform places the state's average annual temperature at 25.4°C for 1981–2010 and 25.8°C for 2011–2024, and projects 26.6°C for 2031–2050 and 26.9°C for 2051–2070 (Figure 5.2). Its clearest signal is recent: observed warming in 2011–2024, at about 0.47°C per decade, is more than double the baseline pace (CEEW, 2026b).

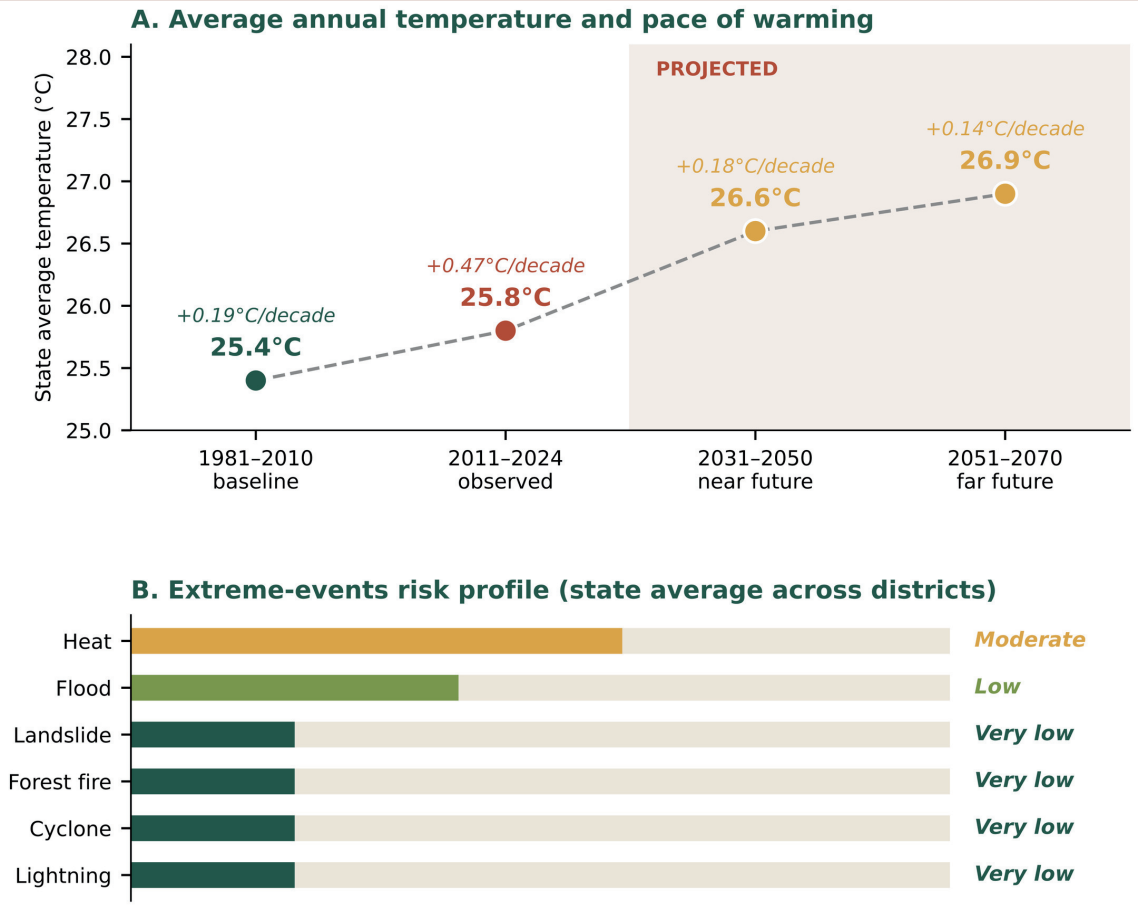


Figure 5.2. Temperature trajectory and extreme-events risk profile for Jharkhand, redrawn from values transcribed from the CRAVIS state dashboard (CEEW, 2026b; TRI, 2026e). Values are unweighted district averages as displayed on the dashboard.

At state level CRAVIS rates heat as moderate, flood as low and other hazards as very low. Averages can hide local concentration: lightning, for example, killed 194 people in Jharkhand in 2023, among the five highest tolls of any state, and caused about 40 per cent of all deaths from natural forces in India that year (NCRB, 2025), yet it barely registers on a state-averaged bar. Table 5.1 sets the hazards against what the assessment villages already report.

Table 5.1. Extreme events: the state outlook set against what villages already report. None of the 24 reports raises lightning, despite its reported toll. Village evidence from TRI (2026d).

Hazard	State outlook	What villages already report	Most exposed
Late or broken monsoon	Declining June–July rain across eastern India (Prabhu and Chitale, 2024)	Late, reduced or irregular rain in 18 reports; recurring drought, notably 2024 (Ghutua); drought named in 9	Rain-fed smallholders on upland (tanr) fields
Heat	Rated moderate; warming fastest now (CEEW, 2026b)	Rising heat in 15 reports; loo winds (Chokad); "hottest year in memory" (Rabda); summer diarrhoea and vomiting linked to heat (Rakua)	Outdoor workers, children, elderly people
Groundwater and stream drought	Hard rock under about 85% of the state (CGWB, 2024a)	Farm borewells past 800 ft against 20 ft two decades ago (Chokad); wells and handpumps dry February to June (Rusu); the river holds water 4–5 months a year, against 8–10 before (Charwadih)	Women fetching water; households without pumps
Floods and intense rain	Flood rated low at state level	A major flood in 2019 remains a reference point (Halumad); no flood early warning in place (Upar Barga)	Low-lying fields and settlements
Forest fire and heat stress on forests	Rated very low at state level	Recurring forest fires (Hulsi, Gurha, Basariya Khurd); mahua, kendu and sal thinning	Forest-produce households; wildlife

5.1.3 Why vulnerability here is easily under-counted

Jharkhand ranks 27th among 35 states and union territories on CEEW's Climate Vulnerability Index, with a score of 0.067 (Mohanty and Wadhawan, 2021). That near-bottom rank reflects an index built around acute disasters; Jharkhand's burden is chronic, arriving as monsoon instability, drought, heat and groundwater scarcity on hard rock, and drought is the dominant hazard flag for nearly all its districts. CEEW's health-sector assessment places seven districts at very high or high climate risk to their health systems (CEEW and UNICEF, 2025). Multidimensional poverty fell from 42.1 per cent in 2015–16 to 28.8 per cent in 2019–21 (NITI Aayog, 2023), real progress that still leaves more than one resident in four with overlapping deprivations. As men migrate, women increasingly run the farms and carry water and fuelwood yet women operate only about 14 per cent of the country's agricultural holdings (Ministry of Agriculture and Farmers Welfare, 2019).

5.1.4 Method: treating memory as evidence

Assessments took place between April and September 2026 in separate groups of elders, women, youth and mixed participants. Where attendance was recorded, in eleven villages, 725 people took part; in the seven that recorded gender, 40 per cent were women.

Most villages scored each theme and gave a direction; two villages in Simdega (Bangaon and Bhaibail) used a general participatory rural appraisal format instead, and two in West Singhbhum (Beterkia and Gaongutu) scored concern alongside their account of change (TRI, 2026d).

5.2 Landscape trends and paradoxes

5.2.1 Key trends across the eight Jeevan Tatva

Jharkhand's villages rate their institutions as improving far less often than the other states do: community and governance improved in 12 of the 24 villages and infrastructure in 12, while landform, water, wildlife and culture declined in most (Figure 5.3; Table 5.2).

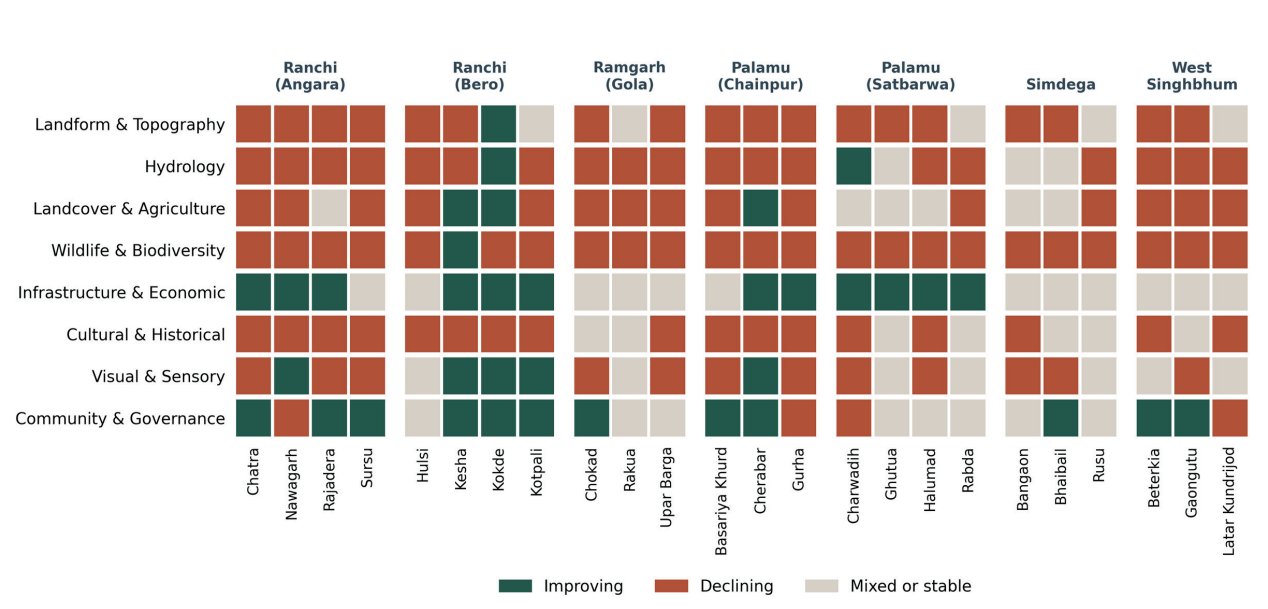


Figure 5.3. Trend direction for each Jeevan Tatva theme, by village and district, in three categories: improving, declining, and mixed or stable. Source: TRI (2026d).

Table 5.2. The eight themes, using each report's own trend direction. Source: TRI (2026d).

Theme	Improving	Declining	Mixed or stable	What the reports say
Landform & Topography	1	18	5	Hills cut for roads and stone; slopes eroding; commons turned to housing; the terrain holds in Rakua and Kotpali
Hydrology	2	19	3	Water table falling; springs, nalas and ahars drying; improving where a check dam (Kokde) or pumps and ponds (Charwadih) eased access
Landcover & Agriculture	3	15	6	Gobar and bullocks replaced by urea and tractors; madua, kodo and kutki dropped; improving where irrigation raised yields (Kesha, Kokde, Cherabar)
Wildlife & Biodiversity	1	23	0	Sal and mixed forest thinning; birds, bees, fireflies and small mammals fewer; elephants and nilgai entering fields
Infrastructure & Economic	12	0	12	Roads, electricity, mobile networks, schools and taps valued; mixed where power is short, roads poor or migration continues
Cultural & Historical	0	17	7	Dhol and mandar giving way to DJ; festivals and akhra gatherings thinning; Sarna groves and festivals holding in several villages
Visual & Sensory	5	12	7	Heat, dust and plastic; improving where pucca homes and greener fields are welcomed (Kesha, Kokde, Kotpali, Cherabar, Nawagarh)
Community & Governance	12	4	8	SHGs and women's voice rising; declining where Gram Sabha meetings and forest committees have thinned (Nawagarh, Gurha, Latar Kundrijod, Charwadih)

Wildlife is the most consistent decline, reported in 23 of the 24 villages; only Kesha records an improvement. Two features set Jharkhand apart from the other states. First, several Bero villages report improvement in land, water or wildlife themes, crediting a check dam, irrigation or tap water. Second, community and governance are more mixed than elsewhere: women's groups are growing, but customary gatherings, Gram Sabha meetings and forest committees are thinning in some villages.

> *"Along with development, we are also seeing destruction."*
> Community statement, Rajadera

5.2.2 Water on hard rock

Water levels show a steady descent (Figure 5.4). In Chokad, agricultural borewells now go past 800 feet, against water at about 20 feet two decades ago. Ghutua's water once stood at about 40 feet and borewells now reach 60–90 feet in winter and 150–200 feet in summer; Rabda reports no water even at about 400 feet. Streams and springs are drying earlier: Charwadih's river holds water for 4–5 months a year against 8–10 before, Rabda's rocky rivulets run dry by April, and Rusu's wells and handpumps fail from February to June.

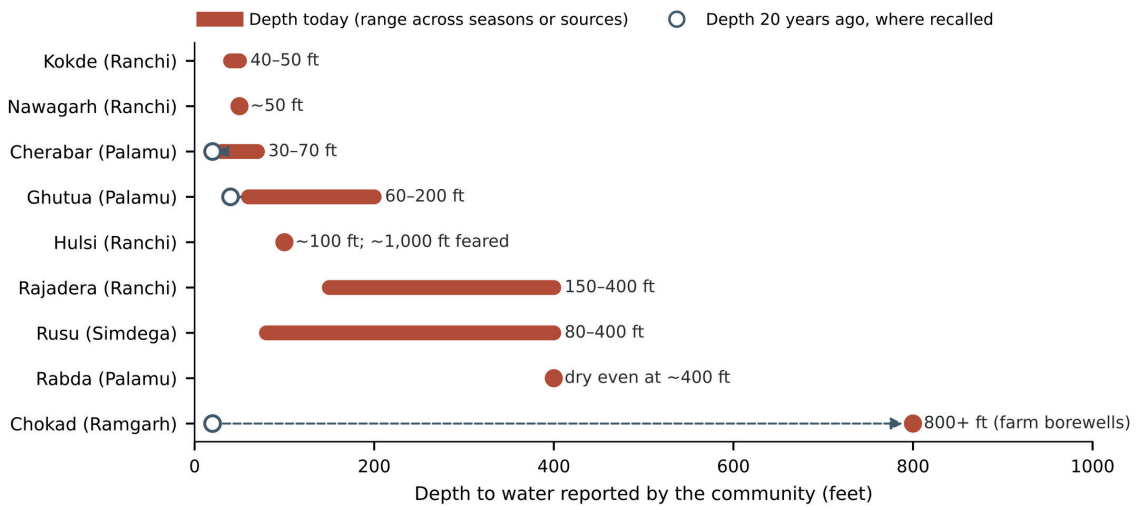


Figure 5.4. Depth to groundwater reported by communities in the nine villages that gave figures. Source: TRI (2026d).

> *"Ten years ago, when we dug a pit, water came out quickly."*
> Community statement, Nawagarh

State figures look calmer. The Central Ground Water Board's 2023 assessment found 5 of Jharkhand's 263 assessment units over-exploited, 6 critical and 11 semi-critical, with only about 31 per cent of extractable groundwater in use (CGWB, 2024a). The two readings are consistent: on hard rock, aquifers are shallow and local, so a village can run dry while block-level extraction stays low. The assessment suggest that village-scale water budgets and recharge matter more here than block categories. Water quality is also raised: "black water" linked to a nearby factory (Gaongutu), pesticide runoff into canals and drinking-water tanks (Bangaon) and seasonal pond contamination (Halumad).

5.2.3 Transitions in tension

Piped water now saves women hours in Kesha and Hulsi while the springs, wells and ponds it replaced are drying (Table 5.3).

Table 5.3. Transitions in tension. Source: TRI (2026d).

Tension	What villagers described	Where	Opportunity
Taps at home, springs and wells gone	Piped water saves women hours, while springs, wells and ponds dry and borewells go deeper.	Kesha, Hulsi, Rabda, Ghutua	Link every piped scheme to local recharge.
Roads and markets, thinner forest	New roads and markets bring income and services, and brought felling, crushers and outside extraction.	Gaongutu, Rajadera, Nawagarh	Roadside and slope replanting; Gram Sabha oversight.
Higher yields, harder soil	Irrigation and fertiliser raised output, while soil hardens and rain no longer soaks in.	Kesha, Bangaon, Rakua, Cherabar	Soil testing; madua and natural farming clusters.
Mining work, polluted water	Iron-ore and crusher work nearby, with black water, dust and illegal mining.	Gaongutu, Beterkia, Nawagarh	Water testing; PESA consent processes.
Pumps for all, water for fewer	Borewells in almost every house ease access now while the table falls for	Ghutua, Chokad, Rajadera	Village water budgets; solar pumps with rules.
Stronger women's groups, thinner customary forums	SHGs grow while tola sabhas, akhra gatherings and forest committees lapse.	Nawagarh, Gurha, Latar Kundrijod	Bring SHGs into Gram Sabha and Van Samiti work.

5.2.4 Four systems loops that recur across the state

The reports describe four self-reinforcing loops that feed one another: a thinning forest, a borewell descent on hard rock, a turn from gobar to chemicals, and a thinning of collective life (Figure 5.5).

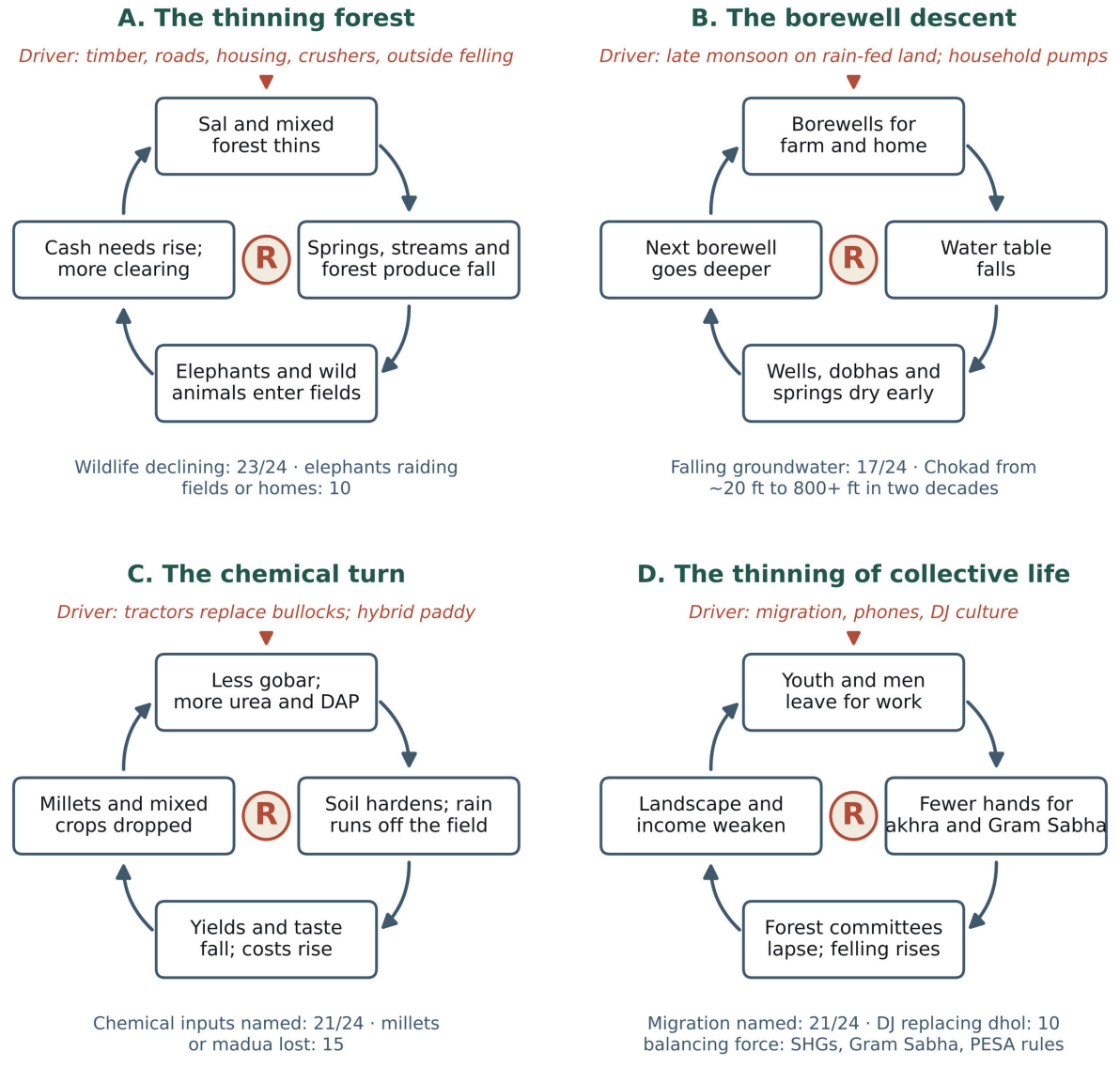


Figure 5.5. Four state-level systems loops. R = reinforcing loop. Counts show the number of village reports (of 24) that record each link. Source: research team synthesis of TRI (2026d).

The thinning forest. Sal and mixed forest have been cut for timber, roads, housing and, in places, for crushers and outside contractors. Springs, streams and forest produce decline with it, and elephants, nilgai and monkeys now enter fields: elephants are reported raiding crops or damaging homes in ten villages, often as a new experience.

> *"Earlier the forest gave us everything; now we have become dependent on the market."*
> Community statement, Nawagarh

The borewell descent. When the monsoon is late on rain-fed uplands, households drill for farm and drinking water. The water table falls, wells, dobhas and springs dry earlier, and the next borewell goes deeper.

The chemical turn. Tractors replaced bullocks, and urea and DAP replaced gobar in 21 villages. The soil hardens so that rain runs off instead of soaking in; yields and the taste of food fall while costs rise; and madua, kodo and kutki are dropped in 15.

> *"Due to continuous chemical farming the soil of some fields is hardening; rainwater no longer soaks in quickly."*
> Community chart, Rakua

The thinning of collective life. Migration takes young men to brick kilns, construction sites and cities, especially in the lean months. With fewer hands and new habits, akhra gatherings, festivals and Gram Sabha meetings thin, and forest committees lapse: in Latar Kundrijod, the Van Samiti that once protected the forest has fallen away. The counterweight is strong: at least 239 SHGs in the eight villages that recorded a count, active Gram Sabhas in many villages, and new PESA rules that strengthen the Gram Sabha's hand.

5.3 Green value chains and the rural bioeconomy

5.3.1 Ten opportunities named by communities

Fruit orchards and agroforestry are named in 23 of 24 reports, and lac, mahua and kendu in 18, where the new PESA rules give Gram Sabhas a formal role (Table 5.4).

Table 5.4. Ten green value chains named by communities, described against the six readiness factors. "Villages" = number of village reports listing the chain (approximate keyword coding; fish and vegetables combined). Source: TRI (2026d).

Value chain	Villages	Resource base and existing institutions	Market link and scheme hook	Women's role and climate co-benefit
ENERGY TRANSITION				
Solar irrigation and lighting	17	Solar lift (Charwadih); solar pumps (Chokad, Bhaibail); solar-powered water tank (Latar Kundrijod)	PM-KUSUM; state renewable energy agency	Irrigates uplands without diesel; best with group ownership and water rules
Clean cooking and biogas	8	LPG spreading in ten villages; firewood still used for cooking (Charwadih)	LPG connections; GOBARdhan	Less smoke and fuelwood carrying; spares the forest
CIRCULAR ECONOMY				
Organic inputs and kechua khad	18	Vermicompost ("kechua khad") proposed by the community (Ghutua, Rabda); gobar khad remembered	JSLPS; natural farming mission; ATMA	SHG-run units; restores soil so rain soaks in
Waste and plastic management	13	Plastic and brick-kiln garbage named (Upar Barga, Gaongutu, Nawagarh)	SBM-G; Finance Commission grants	Women-led collection; cleaner water and air
Sal-leaf plates and forest crafts	5	Sal-leaf pattal-dona (Nawagarh, Rajadera); tendu and sal-leaf trade (Upar Barga)	Local haats; plastic-free public events	Women's craft income; plastic substitution

Value chain	Villages	Resource base and existing institutions	Market link and scheme hook	Women's role and climate co-benefit
NATURE-BASED SOLUTIONS AND BIOECONOMY				
Fruit orchards, agroforestry and nurseries	23	Mango and native fruit trees; fruit plantation emerging (Nawagarh)	VB-G RAM G; state fruit-plantation programmes; Green India Mission	Shade, fruit income and slope protection
Goats, pigs and backyard poultry	15	About 385 livestock-rearing families (Ghutua); pig rearing (Kesha); Black Bengal goats (Rabda)	JSLPS; National Livestock Mission	Women's liquid savings; manure for fields
Madua, millets and seed banks	12	Madua, kodo and kutki remembered; seed saving in several villages	Jharkhand Madua Kranti: ₹3,000 an acre for madua growers, with procurement planned in Simdega	Women's food knowledge; low water need; nutrition
Lac, mahua, kendu and forest produce	18	Lac established with a processing unit nearby (Nawagarh, Sursu); mahua, kendu, chironji, kusum (Latar Kundrijod)	Van Dhan and TRIFED; Gram Sabha role over minor forest produce under PESA	Women lead collection; income that rewards standing trees
Fish and vegetables	14	Fish in ponds and dams (Charwadih, Rakua); vegetables for weekly haats (Bangaon, Chokad)	PMMSY; local haats	Protein and daily cash; restored ponds pay back

Forest produce, fruit trees and organic inputs are the strongest base, and the new PESA rules give Gram Sabhas a formal role over minor forest produce. Madua has a state incentive and planned procurement in Simdega, one of the assessed districts. Solar irrigation, named in 17 reports, works best with group ownership and a village water budget, so that cheaper pumping does not speed up the borewell descent.

5.3.2 Distinctive demands from across the state

Nawagarh has pledged to halt the stone crusher and the felling, and Rakua's forest-protection committee has set itself five tasks (Table 5.5).

Table 5.5. Distinctive community demands. Source: TRI (2026d).

Theme	Demand	Village	What it tells planners
Forest	A village pledge to plant trees, halt the crusher and the felling, and revive nalas, ponds, wells, soak pits and check dams	Nawagarh	A community ready to set its own rules
Forest	A van suraksha samiti resolution to halt further clearing; five tasks the villagers set themselves	Rakua	Self-authored stewardship
Forest	Revive the lapsed Van Samiti so outsiders cannot carry wood away; form a new one	Latar Kundrijod, Gurha	Customary guardianship to be restored
Water	Revive ahars, pynes and ponds for rainwater harvesting	Rabda	Traditional plateau water systems as the design
Water	Stop pesticide runoff into canals and drinking-water tanks	Bangaon	Water quality as a community priority
Water	A water supply for Pahan Tola	Kotpali	Hamlet-level gaps within villages
Mining	"Black water" from the nearby factory and mining belt named as a priority concern	Gaongutu	Pollution oversight at village level
Land	Update land records still in the names of the previous generation	Charwadih	Tenure as a precondition for schemes
Wildlife	Measures against elephant raids on crops and homes	Chatra, Hulsi, Halumad, Chokad	A new conflict that needs forest-department support
Soil	"Chemical fertiliser should not be used; organic farming should be promoted"	Hulsi	Demand for a farming transition
Culture	A Dhumkudiya community hall and revival of the mandar drum	Kotpali	Customary spaces as village infrastructure
Livelihoods	Kechua khad enterprise; cultural and eco-tourism around Sarhul and Sarna traditions	Ghutua	Culture and soil as income

5.3.3 Who bears the change

Where the Jharkhand reports tie a burden to a group, it is usually women or the landless: women fetch water from ever-deeper sources in Rabda and Hulsi and now buy forest foods they once gathered, while Rabda's landless majority depends on wage labour and forest produce as the forest thins. Elders are named as the last bearers of forest and festival knowledge (Hulsi, Beterkia), and illness is blamed on chemical food in Hulsi, Basariya Khurd and Rajadera; most other pairings of burden and group are not recorded, so the chapter gives no table for them.

Heat is named in 15 reports, and several villages link it to summer illness (Rakua, Upar Barga), but no report breaks it down by group, a gap for the next round. Other groups also need attention: single-women households (75 in Upar Barga), persons with disabilities (24 in Upar Barga) and landless families.

5.3.4 Gender and the changing landscape

Women's public role is growing across the villages. In Cherabar women now take part in Gram, Mahila, Bal and Tola Sabhas; Gaongutu's Gram Sabha has opened from a men-only affair to mixed participation; Chokad has a woman mukhiya; in Ghutua, SHGs are described as lifting women out of debt; and in Latar Kundrijod nearly every family has an SHG member. At the same time, water and forest work fall mainly on women as men migrate, and Sursu's population is markedly female, which may reflect male migration.
Table 5.6 reads the evidence through the Gender at Work framework (section 3.7).

Table 5.6. The Gender at Work framework applied to the 24 villages. Framework: Rao and Kelleher (2005); Rao et al. (2016). Evidence: TRI (2026d).

INDIVIDUAL	
Consciousness and capabilities · informal Changed: women vocal in assessments (39 of 74 in Charwadih, 66 of 170 in Rajadera); women's leadership rising (Rajadera, Basariya Khurd). Still emerging: women's knowledge of forest foods, seeds and water is rarely treated as expertise (Rakua). Next step: women as facilitators of the assessment and keepers of the sentinel record.	Access to resources · formal Changed: SHG credit and enterprise; taps at home cut water time (Kesha); LPG in ten villages. Still emerging: borewells and land titles follow men's names; forest income thinning. Next step: joint titles and individual forest rights in women's names; group-owned solar pumps.
SYSTEMIC	
Norms and deep structure · informal Changed: Gram Sabhas opening to women (Gaongutu, Cherabar); untouchability eradicated (Ghutua). Still emerging: migration leaves women with farm, water and forest work; customary forums remain largely male-led. Next step: paid stewardship days through VB-G RAM G; women in Van Samitis and akhra committees.	Rules and policies · formal Changed: PESA rules give Gram Sabhas defined powers (2026); the state's GPDP–VPRP integration guidelines link women's plans to Panchayat plans. Still emerging: climate actions in village plans carry no gender tag; women's role in PESA Gram Sabha decisions untested. Next step: gender-tag climate actions; a women's quorum for forest, water and mining decisions.

5.4 Community indicators and critical parameters

5.4.1 What villagers know: memory as a planning resource

Jharkhand's villages classify their own land and water: tanr uplands and don lowlands in Rabda, chua springs in Charwadih and jharna springs in Hulsi (Table 5.7).

Table 5.7. Knowledge the villages hold. Source: TRI (2026d).

Kind of knowledge	Examples from the reports	How planning can use it
Land and water classification	Tanr uplands and don lowlands (Rabda); dobhas, ahars and pynes; chua springs (Charwadih); jharna springs (Hulsi)	Site crops and recharge by the community's own land types
Customary governance	The pahan system of forest custom (Nawagarh); Sarna groves and Jaher Than (Rusu, Chokad, Upar Barga); akhra and Dhumkudiya (Kotpali, Basariya Khurd); Van Panchayat (Rusu)	Anchor stewardship in institutions people already respect
Festival calendar	Karma, Sarhul and Jitiya (Chokad, Hulsi); Maghe, Baha and Rajjo Parab (Latar Kundrijod); Biru Parab (Rusu); Holi with mandar (Rabda)	Time works to the calendar; treat festival shifts as climate signals
Forest foods and medicine	Jirhul, khukhdi and putu (Basariya Khurd, Gurha); char-chironji, kusum, arjun and aonla (Latar Kundrijod); lac hosts	Plant the species people use; value forest food in nutrition plans
Crafts and body	Godna tattooing (Rajadera, now ended); dhol, mandar and nagara; mud-pot cooking and ash cleaning (Rakua); sal-leaf plates	Cultural revival linked to livelihoods
Community diagnosis	"Along with development, we are also seeing destruction" (Rajadera); a "courtroom" where water, forest, land, animals and people argued for one another (Hulsi)	Baseline hypotheses for monitoring
Local records	Water at 20 ft two decades ago (Chokad); a river flowing 8–10 months, now 4–5 (Charwadih); the 2019 flood (Halumad); the 2024 drought (Ghutua)	Village-owned early warning
Local names for solutions	Kechua khad (Ghutua); gobar khad; dobha; van suraksha resolution (Rakua); the village pledge (Nawagarh)	Write GPDP works in the community's own words

5.4.2 Sentinel indicators and sensory findings

Charwadih's river now flows four to five months a year, against eight to ten before (Table 5.8).

Table 5.8. Community sentinel indicators. Source: TRI (2026d).

What villagers watch	What has changed	Where	What it signals
Depth at which water is struck	About 20 ft to past 800 ft; 40 ft to 150–200 ft in summer	Chokad, Ghutua, Cherabar	Village-scale aquifer stress
Months a stream or river flows	8–10 months to 4–5; dry by April	Charwadih, Rabda, Nawagarh	Loss of base flow from forest
Springs	Dried or failing earlier	Hulsi, Gaongutu	Recharge loss on slopes
Wild foods: jirhul, khukhdi, putu	Disappearing	Basariya Khurd, Gurha	Forest-floor health
Bees, butterflies and fireflies	Fewer	Gurha, Kotpali, Chokad	Pesticides and habitat loss
Elephant visits	New or more frequent	Chatra, Nawagarh, Hulsi, Chokad and six others	Habitat pressure beyond the village
Rain soaking into the field	Now runs off hardened soil	Rakua	Declining soil structure
Taste of fruit and food	"No longer tastes as before"	Upar Barga, Rabda	Soil and food quality concerns

5.4.3 Critical parameters for the state-wide view

Table 5.9. Critical parameters. Village evidence from TRI (2026d); state figures as cited.

Parameter	What the 24 villages show	What it suggests
Heat	Rising heat in 15 reports; loo (Chokad); hottest year in memory (Rabda).	Shade planting; heat protocols for outdoor work.
Extreme weather events	Late or broken rain in 18; drought in 9; a 2019 flood (Halumad); lightning not raised in any report.	Drought-ready cropping; check lightning risk with the community.
Climate knowledge and preparedness	Strong local reading of change, but no early warning recorded (Upar Barga).	Village disaster plans in the GPDP.
Water security and quality	Falling groundwater in 17; black water (Gaongutu); pesticide runoff (Bangaon); pond contamination (Halumad).	Village water budgets; water testing near mines and fields.

Parameter	What the 24 villages show	What it suggests
Migration and income	Named in 21; brick kilns February–May (Rusu); fewer leaving where farm income rose (Sursu, Kokde).	VB-G RAM G, from 1 July 2026 with 125 days and a water-security domain (Drishti IAS, 2026a).
Land tenure and forest rights	PESA rules notified January 2026; FRA committees (Rabda); outdated land records (Charwadih); Van Samiti lapsed (Latar Kundrijod).	Record tenure and forest rights in the Community-led Character Assessment Tool.
Health and nutrition	Typhoid, dysentery and malaria up (Upar Barga). Statewide, 67% of young children anaemic, 40% stunted (IIPS, 2021b).	Madua and forest foods in anganwadi and school meals.
Household energy	Power 6–8 hours a day (Rusu) to about 18 hours (Upar Barga); LPG in ten; solar in 17; firewood still used.	Solar for pumping and lighting; clean cooking.
Livestock, fodder and commons	Bullocks replaced; goats and pigs valued; commons turned to housing (Chokad).	Fodder plots; veterinary access.
Markets and processing	Weekly haats (Budh Bazaar, Gondlipokhar, Jonha); distant haats and low prices (Rusu); a lac processing unit nearby (Nawagarh).	Village-level processing of lac, mahua and madua.
Mining and industrial activity	Crusher (Nawagarh); iron ore (Gaongutu); illegal mining (Beterkia); brick kilns (Upar Barga).	Gram Sabha consent and oversight under PESA; pollution checks.
Youth and social wellbeing	DJ replacing dhol in 10; disputes going to the police (Rabda); untouchability eradicated (Ghutua).	Youth roles in monitoring and cultural revival.
Scheme convergence and finance	Demands point to VB-G RAM G, JSLPS, PM-KUSUM, Madua Kranti, Van Dhan, CAMPA and Jal Jeevan Mission.	Converge at village level through the GPDP–VPRP process.

5.5 From community demands to tiered action

Climate-integrated GPDP drafts for the Jharkhand villages were not part of this set, but each village report closes with the community's own demands, often framed for the VPRP and GPDP. Table 5.10 sorts the recurring demands into the three tiers used in the other states, as a starting point for GPDP drafting with each Gram Sabha.

Table 5.10. Recurring community demands sorted into three tiers. The sorting is the research team's; examples are villages whose reports raise the need. Source: TRI (2026d).

Activity	Named in (examples)	Who could lead	Support
TIER 1 · The community can do it alone · no external funds			
Protect remaining forest and sacred groves; agreed norms	Nawagarh, Rakua, Latar Kundrijod,	Gram Sabha, Van Samiti	Community
Clean and desilt ponds, wells and dobhas by shramdaan	Ghutua, Rabda, Gurha, Rusu	SHGs, youth	Community labour
Forest-fire watch and village clean-up of plastic	Hulsi, Gurha, Upar Barga, Gaongutu	Youth, SHGs	Community
TIER 2 · Minor support			
Dobhas, soak pits, recharge pits and farm ponds	Nawagarh, Rakua, Rabda	Gram Panchayat	VB-G RAM G
SHG vermicompost and bio-input units	Ghutua, Rabda	SHGs	JSLPS; ATMA
Fruit nurseries and plantations on uplands	Nawagarh, Kokde, Cherabar	SHGs, Forest Department	VB-G RAM G; state plantation schemes
Goats, pigs and backyard poultry	Ghutua, Rabda, Kesha	SHGs	JSLPS; National Livestock Mission
Lac, mahua, sal-leaf and madua processing	Nawagarh, Sursu, Rajadera, Latar Kundrijod	SHGs, producer groups	Van Dhan; Madua Kranti

TIER 3 · Scheme convergence			
Check dams, watershed works and ahar–pyne revival	Rabda, Upar Barga, Chokad, Kokde	Rural Development, Water Resources	VB-G RAM G; PMKSY
Solar irrigation and lift schemes	Charwadih, Bhaibail, Chokad and 14 others	Energy department	PM-KUSUM
Human–elephant conflict measures and compensation	Chatra, Hulsi, Chokad, Halumad	Forest Department	State forest schemes; CAMPA
Oversight of crushers, mining and brick kilns	Nawagarh, Gaongutu, Beterkia, Upar Barga	Gram Sabha, pollution board	PESA rules; district mineral funds
Land records and forest rights	Charwadih, Rabda, Rusu	Revenue and welfare departments	FRA processes

5.5.1 What this asks of Samaj, Sarkaar and Bazaar

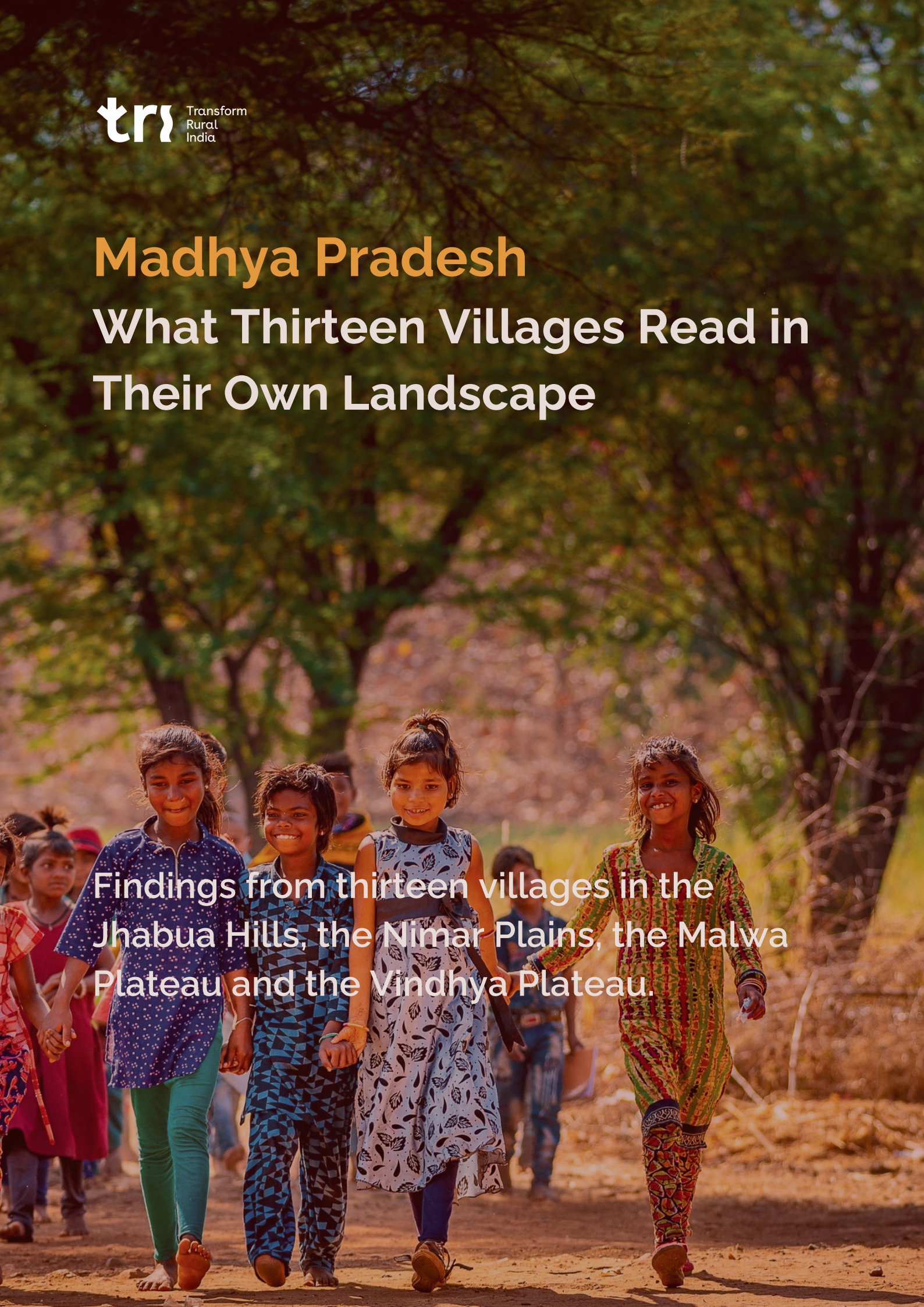
Table 5.11. What the findings invite from each stakeholder.

Who	What the evidence invites	A first step
Samaj: Gram Sabhas, SHGs, elders, youth	Revive forest committees and felling norms; keep the sentinel record; share water and fuel work within households.	A Gram Sabha resolution on forest protection in each village.
Sarkaar: Panchayati Raj and Rural Development	Use the demands recorded in the assessments in the GPDP–VPRP process; source VB-G RAM G works from them; support PESA Gram Sabhas with planning help.	Climate-integrated GPDP drafts for all 24 villages.
Sarkaar: Agriculture and JSLPS	Madua Kranti enrolment and procurement in assessed blocks; natural farming and vermicompost clusters.	Madua clusters in Simdega and Palamu.
Sarkaar: Forest and Welfare	Revive Van Samitis; settle forest rights; elephant early warning and prompt compensation.	Joint forest–Gram Sabha plans in Latar Kundrijod and Gurha.
Sarkaar: Water, Energy, Mines	Village water budgets on hard rock; solar pumps with rules; water testing and PESA consent near mines and crushers.	Water-quality testing in Noamundi villages.
Bazaar: FPOs, Van Dhan centres, traders	Fair prices for lac, mahua, madua and fruit; processing in or near villages.	Lac and mahua collection points in Angara and Noamundi.
Funders and CSR	Support facilitation, working capital, nurseries and monitoring.	Blended finance for processing units.

Transform Rural India

Madhya Pradesh

What Thirteen Villages Read in Their Own Landscape



Findings from thirteen villages in the Jhabua Hills, the Nimar Plains, the Malwa Plateau and the Vindhya Plateau.

CHAPTER SIX

Madhya Pradesh: What Thirteen Villages Read in Their Own Landscape

Findings from thirteen villages in the Jhabua Hills, the Nimar Plains, the Malwa Plateau and the Vindhya Plateau.

AT A GLANCE	
13 villages	In six districts and seven blocks: Alirajpur (Sondwa), Barwani (Rajpur), Dewas (Khategaon), Dhar (Manawar), Jhabua (Thandla and Petlawad) and Sehore (Budni). About 22,600 people; 9 villages have a Scheduled Tribe majority.
~0.6°C per decade	Projected pace of warming by 2051–2070 under a high-emissions pathway, up from about 0.26°C per decade in 1981–2010. Heat is the state's leading hazard and flood is rated moderate (CEEW, 2026c).
13 of 13	villages report declining farmland health and declining wildlife. Twelve report better roads and services, and twelve report stronger community institutions.
750–800 feet	Depth at which Richi and Sukhedi now find water, against 80–150 feet within living memory.
249 actions	in the 13 climate-integrated GPDP drafts. Communities can take up 78 of them without outside funds, and SHGs lead 71 of those 78.

6.1 Context and methodology

6.1.1 A heartland of eleven climates

Every Madhya Pradesh assessed village reports declining farmland and wildlife, and water is where change is fastest. In Richi the water table has fallen from 100–150 feet two decades ago to about 750 feet; in Sukhedi, from 80–90 feet to about 800 feet, drawn by some 146 borewells, while all six ponds the Panchayat once kept have been lost to encroachment. Chemical double and triple cropping has raised output, and villagers say the food has changed with it: in Ratanpur, 'the food fills us but there is no strength in it'.

Roads, power, taps and women's collectives have improved in 12 of the 13 villages. The 13 climate-integrated GPDP drafts hold 249 actions; communities can take up 78 without outside funds, and SHGs lead 71 of those.

Madhya Pradesh is India's second-largest state by area and one of its most land-dependent: agriculture and allied work support roughly two-thirds of its people (EPCO, n.d.). It is home to the largest Scheduled Tribe population of any state, about 1.53 crore people or 21.1 per cent of its population (Census of India, 2011b). Bhil communities are concentrated in the western hill districts of Jhabua, Alirajpur, Dhar and Barwani, and Gond communities across the Vindhya and Satpura forest belts.

State planners recognise eleven agro-climatic zones (Figure 6.1). They run from the alluvial Gird region and semi-arid Bundelkhand in the north, through the black-soil Malwa and Vindhya plateaus and the deep-black Narmada valley, to the Nimar plains and the skeletal soils of the Jhabua hills in the south-west, where rainfall is only 800–1,000 mm (TRI, 2026h). Each zone has its own soils, crops and seasons, and its own inheritance of risk.

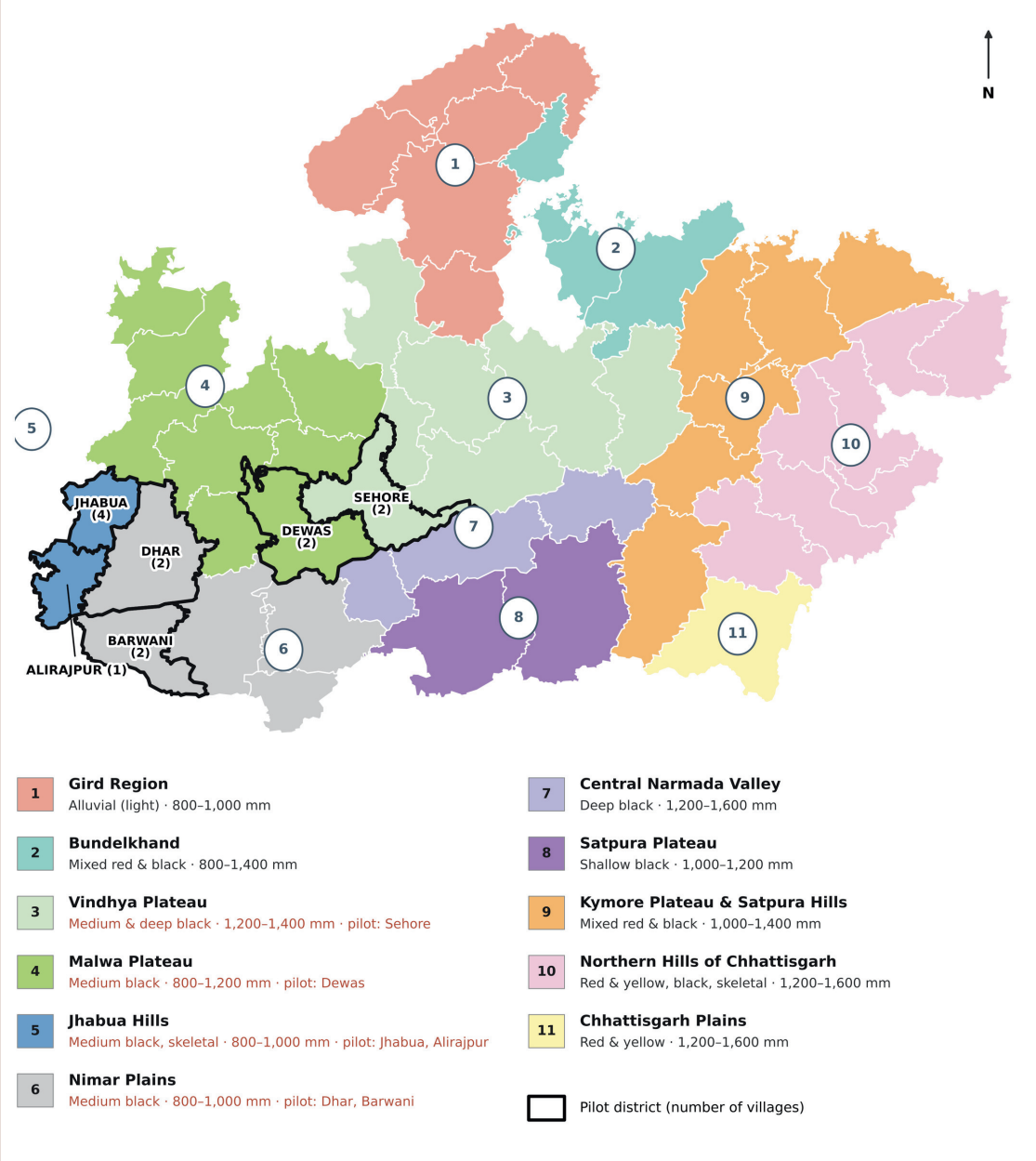


Figure 6.1. Agro-climatic zones of Madhya Pradesh, with dominant soils and rainfall for each zone and the six districts outlined. Zone attributes and district assignments follow the TRI zone map (TRI, 2026h); district boundaries are drawn from open-source boundary data and are indicative.

The assessment cover four of the eleven zones. Five villages are in the Jhabua Hills (Temla in Alirajpur; Bhimkund, Mor, Naharpura and Ramgarh in Jhabua), four in the Nimar Plains (Ekalbara and Sali in Barwani; Chikali and Dedla in Dhar), two on the Malwa Plateau (Richi and Sukhedi in Dewas) and two on the Vindhya Plateau (Ratanpur and Sagonia in Sehore). Khategaon and Budni blocks lie on the Narmada side of their districts, and Temla sits on the Narmada itself. The Gird region, Bundelkhand and the eastern forest zones are not yet covered.

6.1.2 Climate variability and the outlook

The state's climate has long followed three sharp seasons, with summer maxima approaching 48°C and about 1,160 mm of rain falling almost entirely between June and September (EPCO, n.d.). The state's own trend analysis now records more hot days, more frequent heat waves and droughts that have been both severe and widespread; projections for parts of the state reach about 4.6°C of warming by the end of the century under a high-emissions pathway, with more frequent severe droughts and intense rainfall events (EPCO, n.d.).

CEEW's CRAVIS platform points the same way. It places the state's average annual temperature at 25.6°C for 1981–2010 and 25.7°C for 2011–2024, and projects 27.4°C for 2031–2050 and 28.3°C for 2051–2070 under RCP 8.5, with the pace of warming reaching about 0.59°C per decade in the later period (Figure 6.2). Nationally, the platform suggests 15 to 40 additional unusually hot days a year within two decades, and 10 to 30 additional heavy-rainfall days in many districts (CEEW, 2026c).

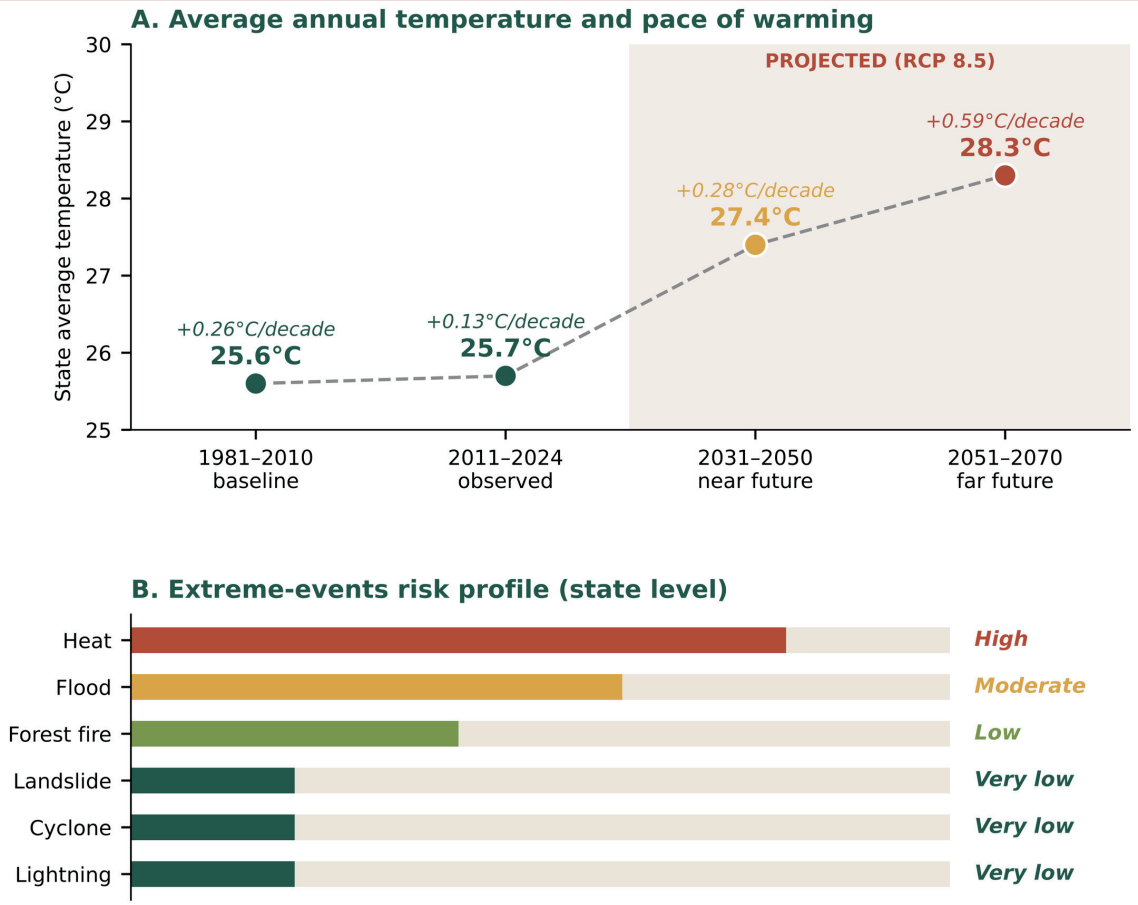


Figure 6.2. Temperature trajectory and extreme-events risk profile for Madhya Pradesh under RCP 8.5, redrawn from values transcribed from the CRAVIS state dashboard (CEEW, 2026c; TRI, 2026h). Values are unweighted district averages as displayed on the dashboard.

CRAVIS rates heat as the state's leading hazard and flood as moderate, while cyclones and landslides barely register. Exposure is uneven: the central plateaus, Nimar and Bundelkhand carry the heaviest heat load. Bundelkhand, which the state shares with Uttar Pradesh, went through nearly two decades of chronic water scarcity before the 2025 monsoon brought up to three times the normal rainfall to parts of the region, flooding fields and destroying the kharif crop (Down To Earth, 2025). Table 6.1 sets these hazards against what the villages already report.

Table 6.1. Extreme events: the state outlook set against what villages already report. Village evidence from TRI (2026f).

Hazard	State outlook	What villages already report	Most exposed
Heat and warm nights	Leading hazard; more hot days and heat waves (CEEW, 2026c; EPCO, n.d.)	Rising heat in 12 of 13 reports; cement homes trap heat where mud homes stayed cool (Richi, Sukhedi); fewer stars and no cool breeze at night (Mor); fewer cold days (Naharpura)	Outdoor and farm workers; women in field and water work; elderly people; young children
Erratic monsoon, dry spells and drought	More frequent severe droughts projected (EPCO, n.d.)	Rainfall down from about 1,200 to 850 mm (Richi); rain scattered across all twelve months and urad moved from the monsoon to summer (Temla); rain too late or too sudden at harvest (Sali); fewer rains over the last two to four years (Dedla)	Rain-fed smallholders and households without a borewell
Groundwater drought and drying rivers	26 of 317 blocks over-exploited and 61 semi-critical (CGWB, 2024b)	Water at about 750 ft in Richi and 800 ft in Sukhedi; Sagonia's river dry by February–March; the Mahi dry in summer (Mor); Naharpura's tank dry	Small farmers facing pumping costs; women and girls who fetch water; livestock
Heat stress on forests and wildlife	Forest belts reordering under heat and erratic rain (TRI, 2026h)	Forest pools dry in May–June, so tigers and deer come to Sukhedi for water; Palash, sparrows and honeybees declining (Sali, Ramgarh, Naharpura)	Households at the forest edge; livestock keepers
Intense rain, pests and disease	Flood rated moderate; more heavy-rain days (CEEW, 2026c)	No recent flood recorded in the villages, but unseasonal rain damages standing crops (Temla, Sali, Ramgarh); pest attacks with rising heat (Chikali, Dedla); more mosquitoes and seasonal illness (Ramgarh, Mor)	Farmers at harvest; women carrying care work; children

6.1.3 Why vulnerability here is easily under-counted

Madhya Pradesh ranks 22nd among 35 states and union territories on CEEW's Climate Vulnerability Index, with a score of 0.182 (Mohanty and Wadhawan, 2021). That index is built around acute events; much of the state's burden is chronic, arriving as heat, groundwater decline and monsoon instability, and the state average hides wide district differences. Poverty has fallen fast: the share of people who are multidimensionally poor dropped from about 36.6 per cent in 2015–16 to about 20.6 per cent in 2019–21, the second-fastest improvement in the country, with Alirajpur and Barwani among the districts that improved most (NITI Aayog, 2023). The same districts had the furthest to climb, and roughly one resident in five still lives with overlapping deprivations. Gender adds a second axis: as men migrate, women increasingly run farms yet women operate only about 14 per cent of the country's agricultural holdings (Ministry of Agriculture and Farmers Welfare, 2019).

6.1.4 Method: treating memory as evidence

Assessments took place between February and April 2026, in separate groups of elders, SHG women, youth and mixed participants; in Chikali and Dedla the groups also included persons with disabilities and landless households. Where attendance was recorded, in six villages, 262 people took part.

The outputs are 13 village landscape reports and 13 climate-integrated GPDP drafts, each with a three-tier action plan (TRI, 2026f; 2026g).

6.2 Landscape trends and paradoxes

6.2.1 Key trends across the eight Jeevan Tatva

Farmland and wildlife declined in all 13 villages and the sensory landscape in 12, while infrastructure and community institutions improved in 12 (Figure 6.3; Table 6.2). For Mor and Naharpura, whose reports give reasons but no arrow, the direction is taken from each report's own synthesis.

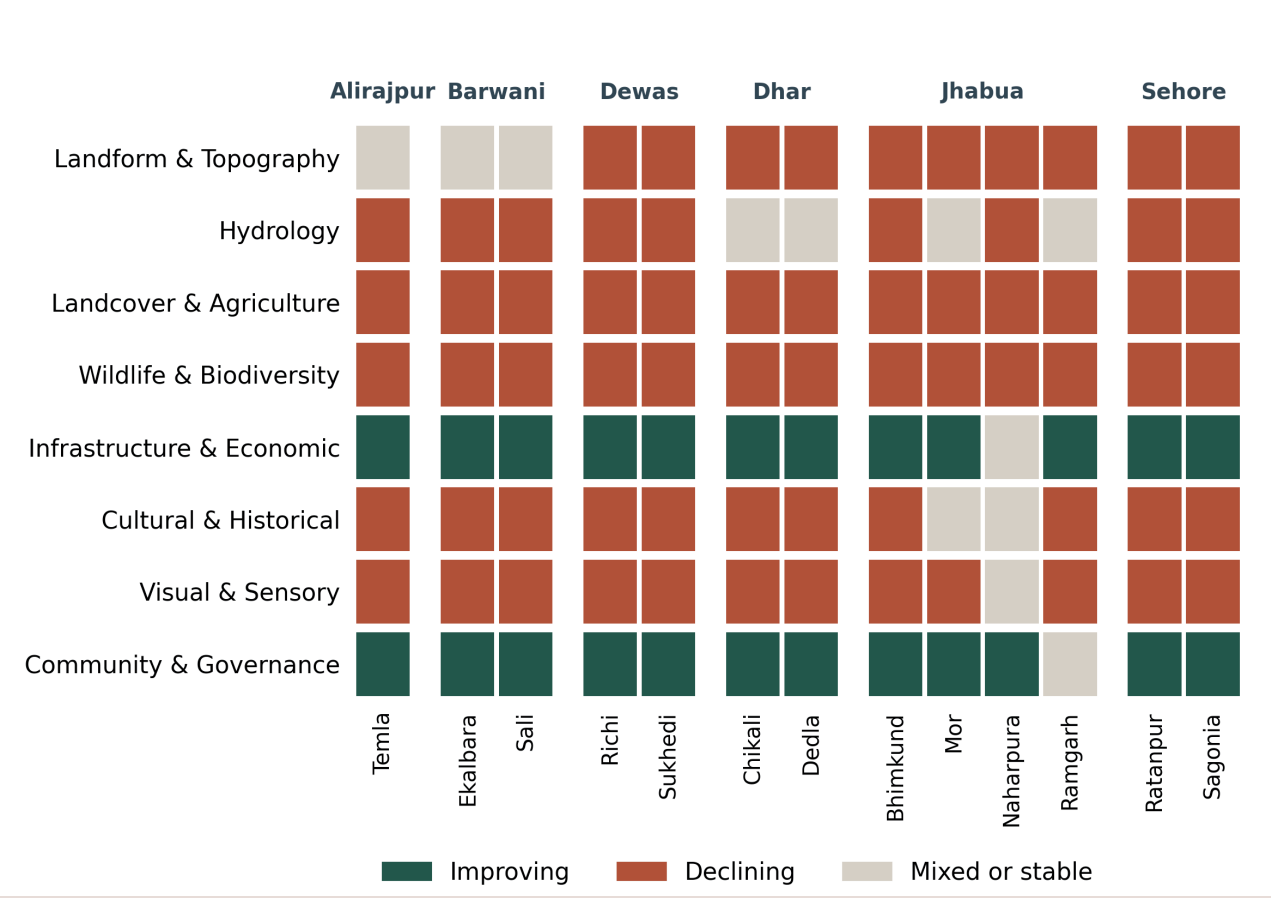


Figure 6.3. Trend direction for each Jeevan Tatva theme, by village and district, in three categories: improving, declining, and mixed or stable. Source: TRI (2026f).

Table 6.2. The eight themes, using each report's own trend direction. Source: TRI (2026f).

Theme	Improving	Declining	Mixed or stable	What the reports say
Landform & Topography	0	10	3	Soil hardening, commons turned into plots, stone-quarry pits (Richi), slopes flattened (Sagonia); the landform itself is stable in Temla, Ekalbara and Sali
Hydrology	0	9	4	Groundwater falling; wells, ponds and rivers drying; mixed where taps now reach homes (Chikali, Dedla, Mor) or the canal lifted water levels (Ramgarh)
Landcover & Agriculture	0	13	0	Chemical double and triple cropping; orchards cut for field acreage; millets given up; soil described as hard and banjar (barren)
Wildlife & Biodiversity	0	13	0	Vultures, fireflies, butterflies and sparrows gone; nilgai numbers rising; tigers and deer reaching Sukhedi in search of water
Infrastructure & Economic	12	0	1	Roads, electricity, tap water, schools and housing; Naharpura mixed, as its water tank is dry and there is no health sub-centre
Cultural & Historical	0	11	2	Collective Bhagoria and Diwali dances, Ram Leela and folk songs fading; Mor and Naharpura mixed, with temples renewed and a stepwell still tended
Visual & Sensory	0	12	1	Heat, loss of shade and colour, smoke from kilns and factories, fewer stars at night
Community & Governance	12	0	1	About 237 SHGs; women in Gram Sabhas and Panchayats; Ramgarh mixed, with commons management still weak

As in other states, the themes that improved are those where public programmes and women's collectives have been most active, while the natural and cultural systems that no single programme looks after as a whole have declined. The softer spots show what helps: in Ekalbara, 125 farmers are moving to natural farming with support from Krishi Sakhis; in Ramgarh the canal lifted water levels; in Mor, piped water has put clean supply within reach; and in Naharpura, land is increasingly being registered in women's names.

6.2.2 Water: the depth race

Water is where change is fastest. In Richi the water table stood at 100–150 feet two decades ago and is now around 750 feet, with 38 borewells against 5 working wells and rainfall down from about 1,200 to 850 mm. In Sukhedi, water once found at 80–90 feet now comes at about 800 feet from some 146 borewells; all six ponds the Panchayat once kept have been lost to encroachment, and the step-wells are dry.

> *"When I came here as a bride, water would come after just a little digging; but today it is hard to find water even at 800 feet, and that too does not last the whole season. People are in a race over who will drill the deeper borewell."*
> Village elder, Sukhedi

Irrigation has not settled the question. Canal water now reaches Ekalbara and Sali and makes three crops possible, yet groundwater is falling in both, and summer scarcity stops the third crop in Ekalbara. Sagonia's river, where the elders learned to swim, dries by February or March; the Mahi at Mor dries in summer as sand is lifted from its bed. Deep pumping also brings high electricity bills (Richi, Sukhedi), and solar pumps under PM-KUSUM, while easing costs, can increase extraction where there are no shared water rules (Sukhedi).

State data show the same pattern at a coarser scale. The Central Ground Water Board's 2024 assessment classifies 26 of the state's 317 assessment units as over-exploited, 5 as critical and 61 as semi-critical, with about 58 per cent of extractable groundwater in use and hard rock underlying roughly four-fifths of the state (CGWB, 2024). The same assessment found nitrate above permissible limits in about 23 per cent of samples, with anomalies recorded in Barwani, Dewas, Dhar and Jhabua, and scattered fluoride anomalies in Alirajpur, Dewas and Dhar. When villagers say the water "tastes different" (Ekalbara, Sali, Temla), testing would be a sensible first response.

6.2.3 Transitions in tension

Canal and pond lift irrigation have made three crops possible in Ekalbara and Sali, and groundwater is falling in both (Table 6.3).

Table 6.3. Transitions in tension. Source: TRI (2026f).

Tension	What villagers described	Where	Opportunity
More irrigation, less water	Canal and pond lift irrigation have made three crops possible, while groundwater falls and summer scarcity persists.	Ekalbara, Sali, Ramgarh	Pair canal command areas with recharge works and crop planning.
Higher output, thinner margins	Yields rose with chemical inputs, but input and pumping costs rose faster; Dedla's farmers describe being pushed towards bankruptcy.	Dedla, Chikali, Richi, Sukhedi	Natural farming clusters and soil testing to right-size inputs.
Taps at home, wells gone	Piped water has eased women's daily burden; old wells and step-wells have dried, and a new tank stands empty.	Chikali, Dedla, Mor, Naharpura	Link every piped scheme to local recharge and repair.

Tension	What villagers described	Where	Opportunity
Cheaper pumping, faster decline	Solar pumps lower costs but, without shared rules, add to the depth race.	Sukhedi	Pair PM-KUSUM pumps with a Gram Sabha water budget.
Durable homes, warmer villages	Pucca homes and roads are valued, but seal the soil and hold heat; timber for housing has thinned the forest (Temla).	Richi, Sukhedi, Temla	Soak pits for every pucca house; shade planting in housing programmes.
Fewer predators, more crop raids	With predators gone and forest water scarce, nilgai numbers have risen and wildlife enters fields.	Sukhedi, Mor, Naharpura, Ramgarh, Richi	Forest water points and buffer planting with the Forest Department.

Yields rose with chemical inputs and costs rose faster; Dedla's farmers describe being pushed towards bankruptcy.

> *"Now even when the crop is good, the diseases do not stop, and in farming the farmer is going bankrupt."*
> Mixed group, Dedla

In Chikali, gas and a tap at home lifted a daily burden in the same years that the forest went.

> *"Earlier food was cooked on the chulha, we brought wood from the forest, and we had to carry water from the well; now food is cooked on gas and a tap has come into the house, but the forest is gone and the expenses have risen."*
> Women's group, Chikali

6.2.4 Four systems loops that recur across the state

The reports describe four self-reinforcing loops, and the first three feed one another: a race to drill deeper, a manure gap as cattle decline, a thinning canopy that lets nilgai multiply, and a shift from shared commons to private plots (Figure 6.4).

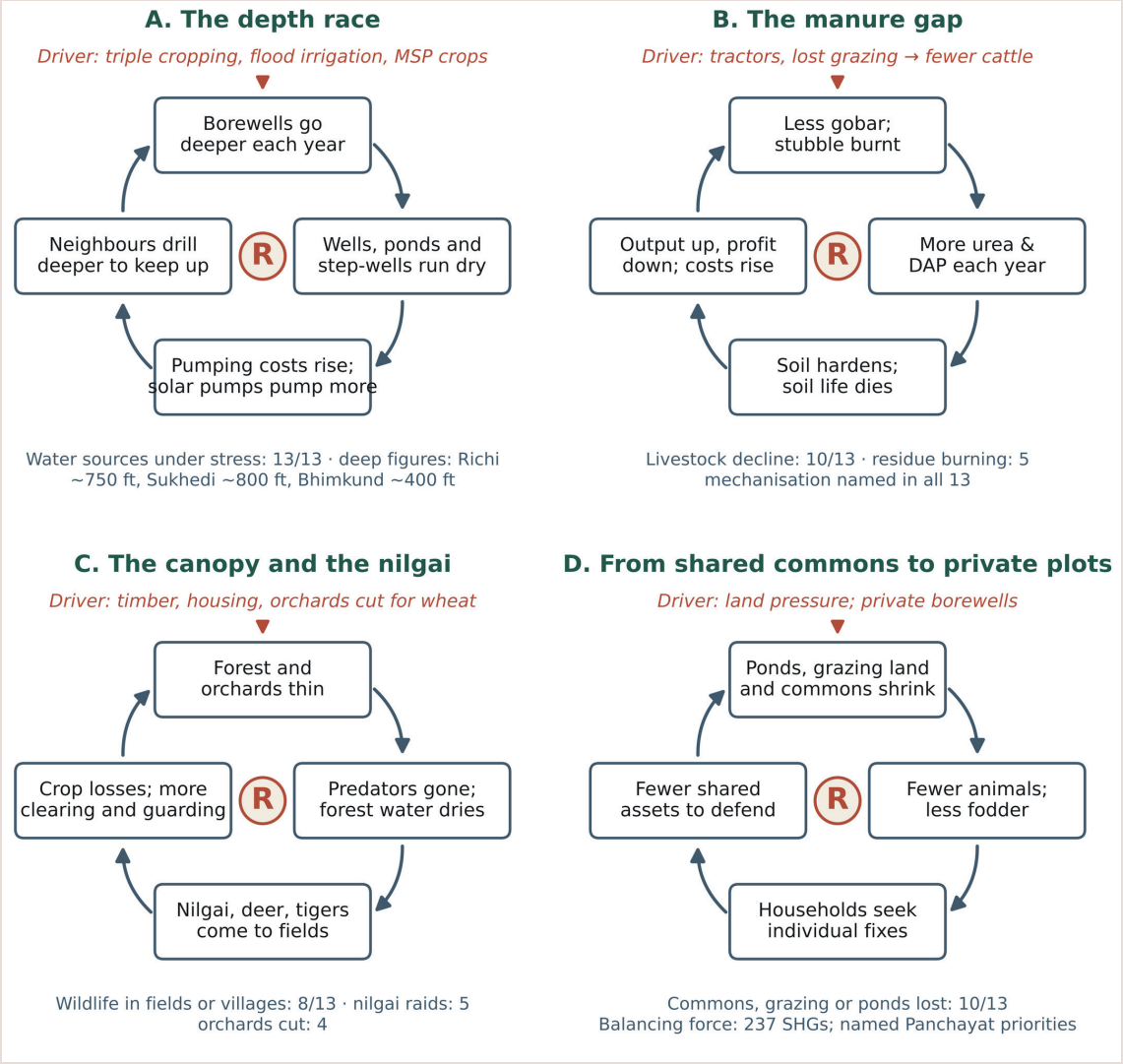


Figure 6.4. Four state-level systems loops. R = reinforcing loop. Counts show the number of village reports (of 13) that record each link. Source: research team synthesis of TRI (2026f).

The depth race. Triple cropping, flood irrigation for wheat and the security of support prices for field crops have raised the demand for water. Each household that drills deeper lowers the water for its neighbours, who then drill deeper still. Sukhedi's farmers note that fruit orchards were cut for wheat acreage because trees have no price protection and take years to bear.

The manure gap. Tractors replaced bullocks and grazing land shrank, so cattle numbers fell in 10 villages. Less dung means more urea and DAP; stubble that once became fodder is now burnt (5 villages), killing soil life. Output rises for a while, then costs overtake it.

> *"With the animals gone, cow-dung manure dwindled, and burning crop residue in the fields has killed the soil's living organisms."*
> Farmer, Richi

The canopy and the nilgai. Forests and orchards have thinned for timber, housing and field acreage. With predators gone, nilgai have multiplied in five villages; and when forest pools dry in May and June, tigers and deer come to Sukhedi in search of water. Residents there have built temporary ponds in the forest to keep wildlife away from homes, a small, humane adaptation that could be supported more widely.

> *"In summer there is no water left in the forest, so tigers and deer come right up to the village in search of it."*
> Community discussion, Sukhedi

From shared commons to private plots. Ponds, grazing land and open commons have been lost or encroached in 10 villages. Fewer commons mean less fodder, fewer animals and more reliance on private solutions. The counterweight is strong: about 237 SHGs, active village organisations and Panchayats that have named their own priorities, such as soak pits for every pucca house in Richi and the restoration of the six lost ponds in Sukhedi.

6.3 Green value chains and the rural bioeconomy

6.3.1 Ten opportunities named by communities

Organic inputs, orchards and SHG enterprises are named in all 13 reports and already have institutions behind them (Table 6.4).

Table 6.4. Ten green value chains named by communities, described against the six readiness factors. "Villages" = number of village reports listing the chain. Source: TRI (2026f; 2026g).

Value chain	Villages	Resource base and existing institutions	Market link and scheme hook	Women's role and climate co-benefit
ENERGY TRANSITION				
Solar pumps, drip and street lighting	5	Solar pumps already in use in Sukhedi; solar drip requested in Ramgarh; irregular grid supply in Chikali and Dedla	PM-KUSUM; MNRE schemes	Cuts diesel and grid costs; best with a village water budget and group ownership
Biogas and clean cooking	3	Livestock and residue in Chikali and Dedla; gas cooking spreading (Chikali, Ekalbara)	GOBARdhan (SBM-G); LPG connections	Less fuelwood carrying and smoke; spares the forest
CIRCULAR ECONOMY				
Organic inputs and natural farming	13	125 farmers already moving to natural farming with Krishi Sakhis (Ekalbara); gobar khad proposed by Panchayats (Richi)	Natural farming mission, PKVY, ATMA	SHG-run bio-input units; restores soil life and water absorption
Crop residue and waste circularity	12	Stubble burnt in five villages; no waste system in Mor; SHG cleanliness drives (Sagonia)	SBM-G; Finance Commission grants	Women-led collection; cleaner air and water

Value chain	Villages	Resource base and existing institutions	Market link and scheme hook	Women's role and climate co-benefit
SHG enterprises: vegetables, tailoring, eco-products	13	57 SHG members in vegetables and 18 in tailoring (Ekalbara); 50 in vegetables (Sali); cloth bags and leaf plates proposed	Haats and mandis at Khategaon, Thandla, Petlawad, Bodali; NRLM-SVEP	Direct income for women; plastic substitution
NATURE-BASED SOLUTIONS AND BIOECONOMY				
Orchards and agroforestry	13	Only three mango and guava orchards left in Richi; 'Ek Bagiya Maa Ke Naam' planting under way (Ekalbara); Maa ki Bagiya and Badi proposed (Sukhedi)	Fruit markets; MIDH, VB-G RAM G, Green India Mission	Shade, cooling, habitat and long-term household income
Livestock and dairy	11	Livestock declining but valued; small dairy and shops (Mor, Ramgarh)	Rashtriya Gokul Mission, NLM, dairy federation	Women manage animals; rebuilds the manure cycle
Millets and traditional crops with seed banks	8	Kodo, kutki, jowar and bajra remembered; seed banks proposed in five villages	Rani Durgavati Shree-Ann Protsahan Yojana: kodo ₹2,500 and kutki ₹3,500 a quintal plus a ₹1,000 incentive (Drishti IAS, 2025)	Women's food knowledge; low water need; nutrition
Forest produce: mahua, tendu, gum, herbs	7	Mahua and tendu collection (Ratanpur, Sagonia); mahua and tamarind value addition proposed (Mor, Naharpura); gum and herbs (Bhimkund)	MFP federation, TRIFED, Van Dhan	Women lead collection; income that rewards protecting trees
Fisheries and beekeeping	6	Narmada backwater fishing rising (Temla); river pools (Sagonia); honeybees declining (Naharpura, Ramgarh)	PMMSY; National Beekeeping and Honey Mission	Restored water bodies; pollination for crops

Organic inputs, orchards and SHG enterprises are named everywhere and already have institutions behind them; what they need is working capital, nurseries and steady buyers. Millets have a state price and incentive, but procurement has so far focused on eastern districts, with other districts to be added on demand (Drishti IAS, 2025); the western assessed villages could make that demand collectively. And solar pumping works best with water rules and group ownership, so that it eases the depth race rather than speeding it up.

6.3.2 Distinctive demands from across the state

Richi wants a soak pit made mandatory for every pucca house, and Sukhedi has already dug temporary forest ponds so that tigers and deer drink away from homes (Table 6.5).

Table 6.5. Distinctive community demands. Source: TRI (2026f; 2026g).

Theme	Demand	Village	What it tells planners
Water	Mandatory soak pits for every pucca house and government building, and community water budgeting for flood irrigation	Richi	The Panchayat is ready to set rules for recharge
Water	Restore the six lost pond sites and regulate encroachment on them	Sukhedi	Commons recovery as the first water measure
Water	Rebuild the old water-holding pits and repair the dry tank	Naharpura	Traditional recharge knowledge alongside repair
Water	Stop-dams and a deeper riverbed so that the river holds water through the year	Sagonia	A river valued as culture as well as water; children no longer learn to swim
Water	Local watch on sand extraction so the Mahi can hold its water	Mor	Community oversight of a shared river
Wildlife	Temporary forest ponds so that tigers and deer find water away from homes	Sukhedi	A community-built adaptation that can be supported
Forest	Plant trees and teach their value to the next generation	Temla, Bhimkund	Restoration tied to learning
Landscape	Replant Palash, whose flowering once marked the season	Sali	Seasonal identity as a restoration goal
Heritage	Restore the Ramgarh Fort and its pond commons; solar drip irrigation	Ramgarh	Heritage and water efficiency together
Culture	Keep the deep-pit idol immersion that protects ponds	Mor	Ritual adapted to protect water
Equity	Literacy drives for women and girls; continue registering land in women's	Dedla, Naharpura	Gender gaps named by the villages themselves
Livelihoods	Scale natural farming through Krishi Sakhis to every SHG member	Ekalbara	A working model ready to grow

6.3.3 Who bears the change

Smallholders carry the costs the reports name most often, from pumping bills in Richi and Sukhedi to food described as 'eating poison' in Ratanpur and Sagonia (Table 6.6).

Table 6.6. Who bears which burden. Dark shading = named strongly or in several villages; light shading = named in one or two; grey = not recorded. Source: TRI (2026f). "Not recorded" means the reports are silent, not that the burden is absent.

Burden	Women	Elderly	Children	Youth	Landless and smallholders
Heat	*Not recorded*	-	-	-	-
Water scarcity	Women and children bear the burden of fetching in scarcity (Ekalbara, Naharpura); eased where taps work	-	Children no longer learn to swim as the river dries (Sagonia)	-	Only deep-borewell owners irrigate; pumping bills weigh on small farmers (Richi, Sukhedi)
Fuelwood	Longer walks and more effort (Mor, Bhimkund); firewood scarce (Temla)	-	-	-	Forest-dependent landless most vulnerable (Ekalbara)

Burden	Women	Elderly	Children	Youth	Landless and smallholders
Chemical exposure	Health risks from chemical exposure (Bhimkund)	-	-	-	BP, sugar and cancers linked to pesticide-laden food (Chikali); skin disease from polluted ponds (Richi); "eating poison" (Ratanpur, Sagonia)
Knowledge loss	Changes in dress, food and festivals noted by women (Sali)	Elders' counsel less sought (Temla); "people do not stay happy" (Ramgarh)	Outdoor play replaced by phones (Chikali, Dedla)	Youth leaving for Indore and Bhopal as farming loses standing (Richi, Sukhedi)	-

Heat is named as a village-wide change in 12 of 13 reports but is not broken down by who suffers most, which is itself a gap for the next round; Ramgarh's report notes that the wider decline in the everyday environment is felt most by women. Other groups also need attention: persons with disabilities (15 in Bhimkund) and single women (8 in Bhimkund), and landless households, who took part in Dedla's assessment.

6.3.4 Gender and the changing landscape

Women's public standing has risen sharply. In Chikali, women describe moving from a life behind the ghoonghat to taking part in household and village decisions; in Sali they once sat separately and now lead discussions; in Ekalbara they contest Panchayat elections; and Sukhedi's sarpanch is a woman. At the same time, water, fuel and food work still fall mainly on women, and several villages record wide gaps in literacy and sex ratio.

> *"Earlier women did not go to the Panchayat; now they have begun to go."*
> SHG and village organisation group, Mor

Table 6.7 reads the evidence through the Gender at Work framework (section 3.7).

Table 6.7 The Gender at Work framework applied to the 13 villages. Framework: Rao and Kelleher (2005); Rao et al. (2016). Evidence: TRI (2026f; 2026g).

INDIVIDUAL	
Consciousness and capabilities · informal Changed: women moved from seclusion to participation (Chikali, Sali, Mor); women contest elections (Ekalbara). Still emerging: female literacy is 52% against 83% for men in Dedla, and far lower in Mor and Naharpura; women's knowledge of food, seeds and animals is seldom treated as expertise. Next step: literacy drives already planned in two villages; women as facilitators of the assessment and keepers of the sentinel record.	Access to resources · formal Changed: SHG credit has reduced reliance on moneylenders (Sukhedi); taps at home lifted a daily burden (Chikali, Dedla, Mor); land increasingly registered in women's names (Naharpura). Still emerging: land in women's names was historically absent (Mor); borewells and pumps follow land ownership. Next step: joint titles; group-owned solar pumps; count working taps alongside connections.
SYSTEMIC	
Norms and deep structure · informal Changed: SHGs have eased caste barriers (Ekalbara, Ratanpur, Sagonia) and now lead 71 of the 78 community-level actions in the GPDP drafts. Still emerging: sex ratio of 892 and child sex ratio of 856 in Dedla, and a male-skewed ratio in Naharpura; women in Chikali describe new fear of outsiders after dark; water and fuel remain women's work. Next step: paid stewardship days through VB-G RAM G; a Gram Sabha commitment to share water and fuel work within households; safety on village paths.	Rules and policies · formal Changed: women in elected posts (Sukhedi); village organisations and cluster federations in every assessed block give women a formal platform. Still emerging: most schemes are designed at household or landowner level, and climate actions in the GPDP drafts carry no gender tag yet. Next step: gender-tag the climate-integrated GPDP; a women's quorum for water and commons resolutions.

As in other states, the plans place great trust in women's collectives: SHGs lead almost every community-level action.

6.4 Community indicators and critical parameters

6.4.1 What villagers know: memory as a planning resource

Sali's farmers once judged soil by the large, firm clods it broke into at ploughing, and say those clods are now rarely seen (Table 6.8).

Table 6.8. Knowledge the villages hold. Source: TRI (2026f).

Kind of knowledge	Examples from the reports	How planning can use it
Origin stories and heritage	Bhimkund takes its name from the legend of Bhim striking dry ground with his mace until water burst forth, a founding story of water in a now water-stressed village; Ramgarh's fort and pond commons	Anchor restoration in stories that already give water and heritage meaning

Kind of knowledge	Examples from the reports	How planning can use it
Seasonal calendars	Urad has moved from the monsoon to the summer season (Temla); Bhagoria, Diwali dhol, Phalgun songs and Ram Leela mark the year; Palash flowering marks the season (Sali)	Treat calendar shifts as early warning; time works around festivals and harvests
Soil lore	Large, firm clods at ploughing were a sign of healthy soil and are now rarely seen; summer fallow once killed pests in the heat (Sali); Kali Mitti and Shyam Mitti named for their qualities (Richi, Sukhedi)	Simple field tests that farmers already trust
Water knowledge	Fish visible in a well as a sign of clean water (Richi); jhiri springs (Temla); a stepwell still cleaned (Naharpura); water-holding pits (Naharpura); deep-pit idol immersion to protect ponds (Mor)	Revive proven structures; community water-quality signs
Food and the body	Jowar and bajra roti (Sali); food cooked on wood "tasted better" (Temla); "the food fills us but there is no strength in it" (Ratanpur)	Nutrition programmes built on local grains
Community diagnosis	Forest loss as the root of water, soil and health problems (Bhimkund); nilgai rising as predators vanish (Sukhedi); canal water arriving while groundwater falls (Ekalbara)	Baseline hypotheses for monitoring and research
Local records and forecasts	A bride's memory of water after "a little digging" against 800 feet today (Sukhedi); rainfall down from 1,200 to 850 mm (Richi); "families will scatter" if the river stays dry (Sagonia)	Village-owned early warning, checked against official data
Local names for solutions	Maa ki Bagiya and Badi kitchen gardens (Sukhedi); Ek Bagiya Maa Ke Naam (Ekalbara); Baag revival and Jaivik Kheti (Richi); shramdaan	Name GPDP works in the community's own terms to build ownership

6.4.2 Sentinel indicators and sensory findings

Fireflies have gone from Richi and Sukhedi over fifteen to twenty years (Table 6.9).

Table 6.9. Community sentinel indicators. Source: TRI (2026f).

What villagers watch	What has changed	Where	What it signals
Depth at which water is struck	80–150 ft to about 750–800 ft; about 400 ft	Richi, Sukhedi, Bhimkund	Village-scale aquifer stress
Working wells and step-wells	Four wells to one or two; step-wells dry	Dedla, Sukhedi, Richi	Loss of shallow recharge
A river children can swim in	Dry by February–March; the Mahi dry in summer	Sagonia, Mor, Temla	Loss of base flow and river culture

What villagers watch	What has changed	Where	What it signals
Soil clods at ploughing	Rarely seen now	Sali	Declining soil structure
Fireflies at night	Gone over 15–20 years	Richi, Sukhedi	Pesticide load and lost habitat
Vultures, sparrows, butterflies	Rarely seen	Ekalbara, Richi, Sukhedi, Ramgarh	Pressure on food chains
Palash flowering and honeybees	Declining	Sali, Naharpura, Ramgarh	Pollinator and habitat loss
Stars and cool breeze at night	Fewer stars; breeze gone	Mor	Warmer, dustier nights
Taste of food and water	Changed	Temla, Ekalbara, Sali, Ratanpur, Sagonia	Food and water quality concerns

6.4.3 Critical parameters for the state-wide view

Table 6.10. Critical parameters. Village evidence from TRI (2026f; 2026g); state figures as cited.

Parameter	What the 13 villages show	What it suggests
Heat	Rising heat in 12 of 13 reports; concrete homes hold heat (Richi, Sukhedi); shade trees and orchards cut; fewer cold days and warmer nights (Naharpura, Mor).	Village heat plans: shade planting, cool spaces at anganwadis and schools, work timing for outdoor labour.
Extreme weather events	Erratic and delayed monsoons, unseasonal rain at harvest and rising pest attacks; no recent floods recorded in the villages, but the state rates flood as moderate.	Plan for dry spells and unseasonal rain in the same season; crop insurance awareness.
Climate knowledge and preparedness	Communities read change precisely (Section 5.1), yet Dedla notes that no disaster-risk plan exists, and elders' knowledge is passed on less often.	Village disaster plans in the GPDP; pair local signs with forecasts; elder–youth sessions.
Water security and quality	Water stress in all 13; changed taste of water; skin disease from polluted ponds (Richi). Statewide, nitrate above permissible limits in about 23% of samples, with anomalies in four assessed districts (CGWB, 2024b).	Village water budgets; nitrate and fluoride testing where borewells go deep.
Migration and income	About 20% migrate from Mor and 30% from Naharpura; seasonal work in Gujarat (Temla); youth to Indore and Bhopal (Richi, Sukhedi); seasonal labour (Ratanpur, Sagonia).	VB-G RAM G, in force from 1 July 2026 with 125 days and a water-security domain, is a key lever (Drishti IAS, 2026a).

Parameter	What the 13 villages show	What it suggests
Land tenure and forest rights	PESA area recorded in Temla; land in women's names rising in Naharpura and historically absent in Mor; forest rights not recorded.	Add tenure and women's titles to the Community-led Character Assessment Tool.
Health and nutrition	BP, sugar and cancers linked by villagers to pesticide-laden food (Chikali); "eating poison" (Ratanpur, Sagonia); seasonal illness and mosquitoes (Mor, Ramgarh); no health facility in Chikali, Dedla or Naharpura. Statewide, 54.7% of women and about 73% of young children were anaemic in NFHS-5, and 38% of households had health insurance (IIPS, 2021c).	Millets in anganwadi, school and ration meals; health outreach with NRM work.
Household energy	Gas cooking spreading (Chikali, Ekalbara); fuelwood scarce or further away (Temla, Mor, Bhimkund); irregular grid supply (Chikali, Dedla); high pumping bills (Richi, Sukhedi).	Track fuel use and fuelwood time together; solar for pumping and lighting.
Livestock, fodder and commons	Livestock decline in 10 villages; commons, grazing land or ponds lost in 10; fodder scarcity (Sali).	Fodder plots and protected grazing; restore village ponds as commons.
Markets and processing	Mandis and haats at Bodali, Khategaon, Thandla, Petlawad and Rajpur; small SHG flour mills (Ekalbara, Sali); little storage or processing.	Village drying, storage and first processing; FPO links.
Mining and industrial activity	Sand lifted from the Narmada (Temla) and the Mahi (Mor); brick kilns and stone quarries (Sali); quarry pits (Richi); factory smoke (Bhimkund).	Gram Sabha oversight of minor extraction; pollution checks near kilns and factories.
Youth and social wellbeing	Youth drawn to cities; phones replace outdoor play; elders in Ramgarh sense less contentment; women in Chikali fear outsiders after dark.	Green skilling; youth roles in monitoring; village safety.
Scheme convergence and finance	Tier 3 works draw on VB-G RAM G, PMKSY-Watershed, Jal Jeevan Mission, CAMPA, NRLM, ATMA and District Mineral Foundation funds; pumping and input costs strain households.	Converge at village level; add working capital and local operators.

6.5 Tiered action plans

Each village's GPDP draft sorts its actions into three tiers: what the community can do with its own labour and norms, what needs modest support from Panchayat funds, NRLM seed money or VB-G RAM G labour, and what needs larger scheme convergence (TRI, 2026g). Across 13 villages the drafts hold 249 actions (Figure 6.5). The 78 Tier 1 actions need no external funds, and SHGs lead 71 of them, often with youth, elders and farmer households alongside.

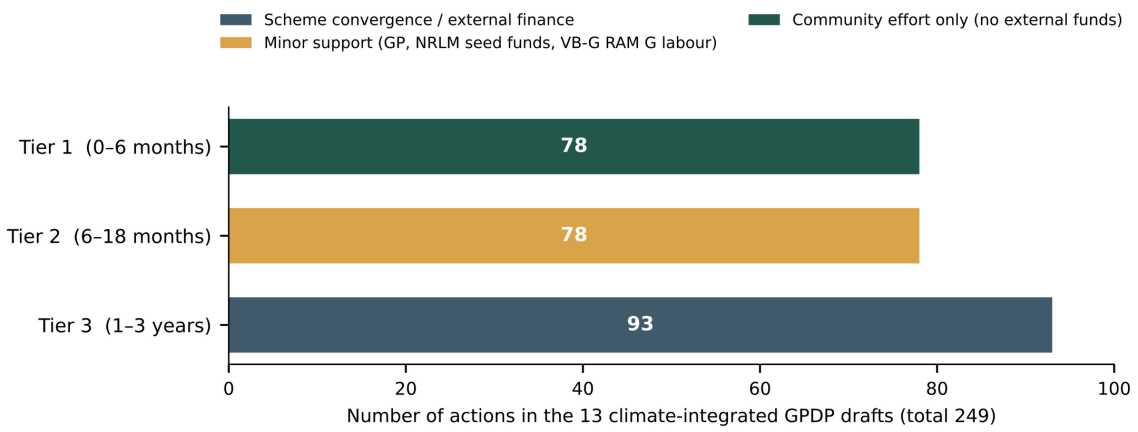


Figure 6.5. The 249 actions by tier and source of support. Source: TRI (2026g); research team coding.

Table 6.11. Top five activities per tier. Counts come from a keyword coding of the 249 actions and are approximate; waste segregation and inclusive governance (9 plans, Tier 1) and green livelihoods and youth skilling (11 plans, Tier 3) also recur. Source: TRI (2026g).

#	Activity	Plans (of 13)	Who leads	Source of support
TIER 1 · The community can do it alone · no external funds				
1	Shramdaan care of ponds, wells, stepwells and rivers	13	SHGs, youth, Gram Sabha	Community labour
2	Return to gobar and compost; stop burning stubble	13	Farmer households, SHGs	Community labour
3	Community planting and agreed norms on tree-cutting	13	SHGs, youth, Gram Sabha	Community labour
4	Revive festivals, songs and elders' knowledge	13	Elders, youth, SHGs	Community
5	Household animal husbandry to restore the manure cycle	9	Farmer households, SHGs	Community
TIER 2 · Minor support				
1	SHG composting and bio-input units, with soil-testing camps	13	SHGs, Krishi Sakhi	NRLM seed money; ATMA; KVK
2	Recharge works: pits, field bunds and ridge-to-valley planting	12	Gram Panchayat	VB-G RAM G; watershed programmes

#	Activity	Plans (of 13)	Who leads	Source of support
3	Village nurseries and agroforestry	10	SHGs, Forest Department	Forest Department saplings; MIDH
4	SHG and youth green enterprises	8	SHGs, youth	NRLM-SVEP; RSETI
5	Repair of tanks, handpumps and stop-dams	8	Gram Panchayat	GP funds; Finance Commission water grants
TIER 3 · Scheme convergence · 1–3 years				
1	Watershed and recharge at scale, including Amrit Sarovar ponds	13	Rural Development, Watershed Mission	VB-G RAM G; PMKSY-Watershed; Jal Shakti Abhiyan
2	Drinking-water security linked to recharge	12	PHED, Gram Panchayat	Jal Jeevan Mission; Finance Commission grants
3	Afforestation at scale and village nurseries	13	Forest Department	CAMPA; Green India Mission; VB-G RAM G
4	Livestock and dairy development	11	Animal Husbandry Department	Rashtriya Gokul Mission; NLM; dairy federation
5	Natural farming clusters and millet value chains	11	Agriculture Department	Natural farming mission; PKVY; ODOP; Shree-Ann scheme

6.5.1 What this asks of Samaj, Sarkaar and Bazaar

Table 6.12. What the findings invite from each stakeholder.

Who	What the evidence invites	A first step
Samaj: Gram Sabhas, SHGs, elders, youth	Agree borewell and tree-cutting norms; keep the sentinel record; share water and fuel work within households.	Pond and stepwell shramdaan before the monsoon.
Sarkaar: Panchayat and Rural Development	Use the climate-integrated GPDP as a source of VB-G RAM G and Amrit Sarovar works; recognise stewardship days; gender-tag climate actions.	Include Tier 2 recharge works in the Viksit Gram Panchayat Plan.
Sarkaar: Farmer Welfare and Agriculture	Extend Shree-Ann procurement to the western assessed districts on demand; grow natural farming clusters on the Ekalbara model.	A millet and natural-farming cluster in each assessed block.
Sarkaar: PHED, Water Resources, CGWB	Add village water budgets to block assessments; test for nitrate and fluoride; link piped schemes to recharge.	Water-quality testing in the 13 villages.

Who	What the evidence invites	A first step
Sarkaar: Forest, Tribal Affairs, Energy	Support Gram Sabha roles under PESA; forest water points for wildlife; pair PM-KUSUM pumps with water budgets.	Scale Sukhedi's forest ponds with the Forest Department.
Bazaar: Shri Ann Federation, dairy federation, FPOs,	Buy millets and milk at stated prices; locate first processing in villages.	Collection points at Khategaon, Thandla and Petlawad.
Funders and CSR	Support what schemes cover less: facilitation, working capital, nurseries, monitoring.	Blended finance for nurseries and dairy; support for women's stewardship time.

A practical starting point is Sukhedi, where restoring the encroached ponds is the one gap to close before community work can begin.



Transform Rural India

Uttar Pradesh

What Twenty Villages Read in Their Own Landscape

Findings from the assessed villages of the Tarai, the eastern and north-eastern plains, the south-western semi-arid tract, the Vindhyan uplands and Bundelkhand.

CHAPTER SEVEN

Uttar Pradesh: What Twenty Villages Read in Their Own Landscape

Findings from the assessment villages of the Tarai, the eastern and north-eastern plains, the south-western semi-arid tract, the Vindhyan uplands and Bundelkhand.

AT A GLANCE	
21 villages	In ten districts: Aligarh, Bahraich, Banda, Basti, Hamirpur, Lakhimpur Kheri, Mirzapur, Prayagraj, Sultanpur and Varanasi. About 52,000 people live in the 15 villages that recorded a usable population figure. This chapter draws on the 20 village reports completed at the time of writing.
Flood and heat	Both rated high for the state. Warming is projected to reach about 0.47°C per decade by 2051–2070 under a high-emissions pathway (CEEW, 2026d).
18 of 20	villages report falling groundwater, and 18 report ponds lost, silted or dry. Waterlogging or floods are reported in 16.
19 of 20	villages report declining wildlife. Fourteen report stronger community institutions; most weigh infrastructure gains against losses and record them as mixed.
454 actions	in the 20 climate-integrated GPDP drafts. Communities can take up 152 of them without outside funds.

7.1 Context and methodology

7.1.1 A state built by rivers

Wildlife is declining in 19 of the 20 Uttar Pradesh villages analysed, and 18 report falling groundwater and ponds lost, silted or dry. Private pumps have replaced shared wells and ponds: Ranjit Gadhi counts 139 electric submersibles, and in Dindaspur water that once stood within 60 feet now lies at 250–320 feet. Uttar Pradesh is the one state where most villages rate infrastructure as mixed, weighing roads, houses and taps against felled trees, hotter homes, irregular power and the young people who leave. In the Tarai the same villages flood in the monsoon and run short in summer; in Manjhra's words, 'the flood and the scarcity are one system'.

Most of Uttar Pradesh stands on the alluvial plain built by the Ganga, the Yamuna, the Ghaghara, the Gandak, the Rapti and the Betwa. The state had 19.98 crore people in 2011, now estimated at about 24 crore, and nearly 78 per cent of them live in villages (Census of India, 2011c). About 92 per cent of its cultivators are small and marginal farmers (Ministry of Agriculture and Farmers Welfare, 2019). It holds India's largest Scheduled Caste population, about 4.1 crore people or 20.7 per cent of the state, while its small Scheduled Tribe population, including the Tharu and Buksa, lives along the Tarai and the forested Vindhyan margins (Census of India, 2011c).

State planners read the state through nine agro-climatic zones (Figure 7.1). The moist Bhabhar and Tarai belt runs along the Nepal border; the Western, Mid-Western and South-Western plains thin from sugarcane country into semi-arid tracts around Agra and Mathura; the Central, North-Eastern and Eastern plains form the rice-and-wheat heartland;

and in the south the land rises into the Vindhyan plateau and the granite country of Bundelkhand. Annual rainfall falls from about 1,210 mm in the north-eastern plains to about 721 mm in the south-west, and irrigation covers about 80 per cent of cultivated land in the eastern plain but only about 25 per cent in Bundelkhand (TRI, 2026k; indicative planning values).

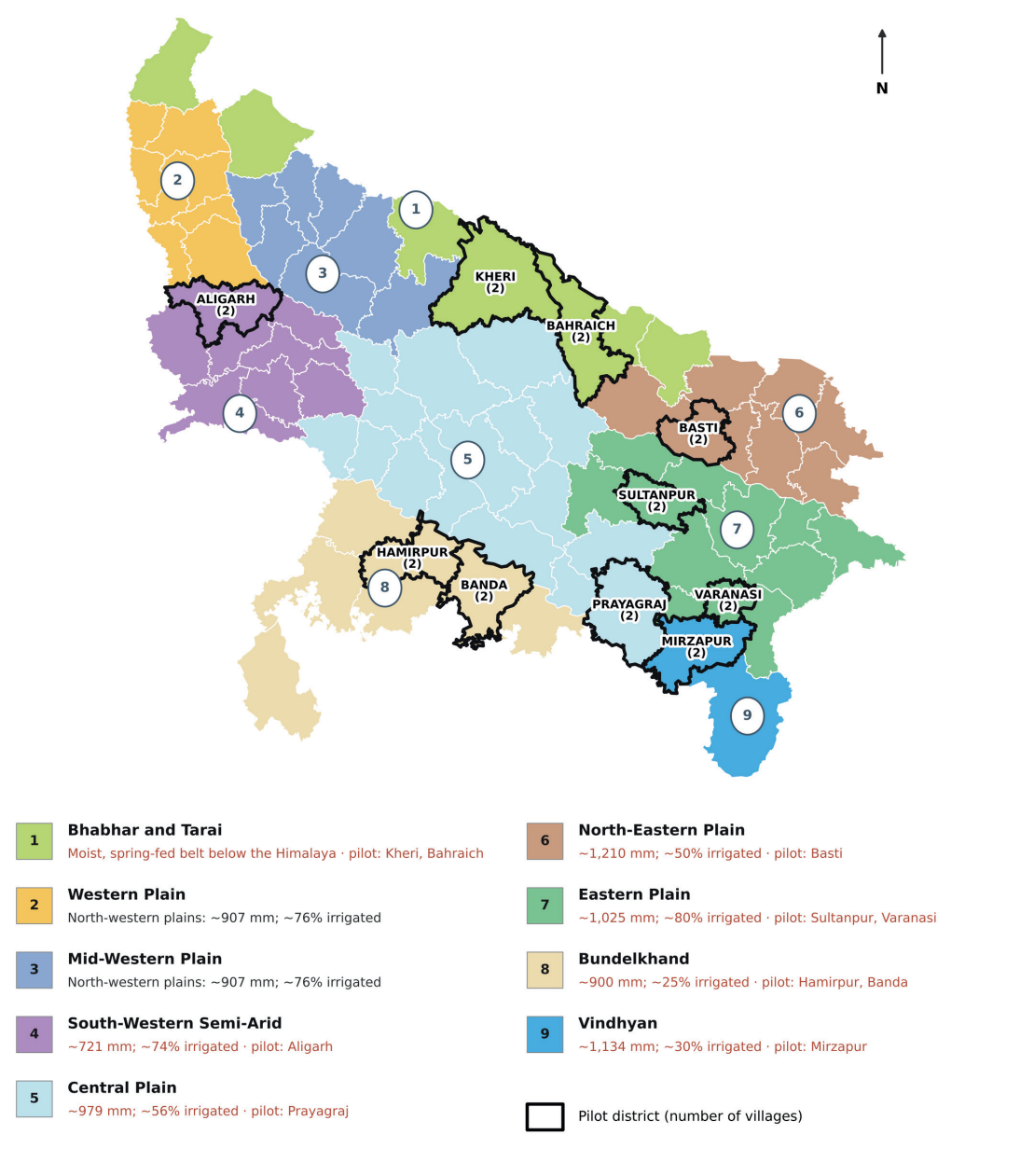


Figure 7.1. Agro-climatic zones of Uttar Pradesh, with indicative rainfall and irrigation for each zone and the ten assessment districts outlined. District assignments follow the TRI zone map (TRI, 2026k), except that the colours for the Mid-Western and South-Western zones in the source map appear to be swapped and are shown here as described in the zone profiles; zone figures are from TRI's compilation of zone profiles (TRI, 2026k). District boundaries are from open-source data and are indicative.

The assessment cover seven of the nine zones: the Tarai (Bailha and Singha Kala in Lakhimpur Kheri; Manjhra and Ram Nagar Kanda in Bahraich), the South-Western Semi-Arid zone (Pakhodna and Ranjit Gadhi in Aligarh), the North-Eastern Plain (Gangauri and Karapithiya in Basti), the Eastern Plain (Bandhua Kalan and Emiliya Khurd in Sultanpur; Bhedaha and Dindaspur in Varanasi), the Central Plain (Belhat and Devghat in Prayagraj,

whose Koraon block lies on the Vindhyan edge), the Vindhyan zone (Bagheda Khurd and Balapur in Mirzapur) and Bundelkhand (Pathra and Rehunchi in Banda; Alragoura and Kaimokhar in Hamirpur). The Western and Mid-Western plains are not yet covered.

7.1.2 Climate variability and the outlook

The state has recorded more prolonged heat and more intense rainfall over the past two decades (Government of Uttar Pradesh, n.d.). State planning documents estimate that about 30 per cent of its area is flood-prone, and project rainfall rising by about 15–20 per cent and maximum temperatures by about 1.8–2.1°C by the 2050s, with Bundelkhand and the Vindhyan districts among the most vulnerable (Government of Uttar Pradesh, n.d.).

CEEW's CRAVIS platform places the state's average annual temperature at 24.9°C for 1981–2010 and 25.1°C for 2011–2024, and projects 26.6°C for 2031–2050 and 27.5°C for 2051–2070 under RCP 8.5, with the pace of warming reaching about 0.47°C per decade in the later period (Figure 7.2). Unusually, it rates two hazards as high for the state at once: flood and heat (CEEW, 2026d).

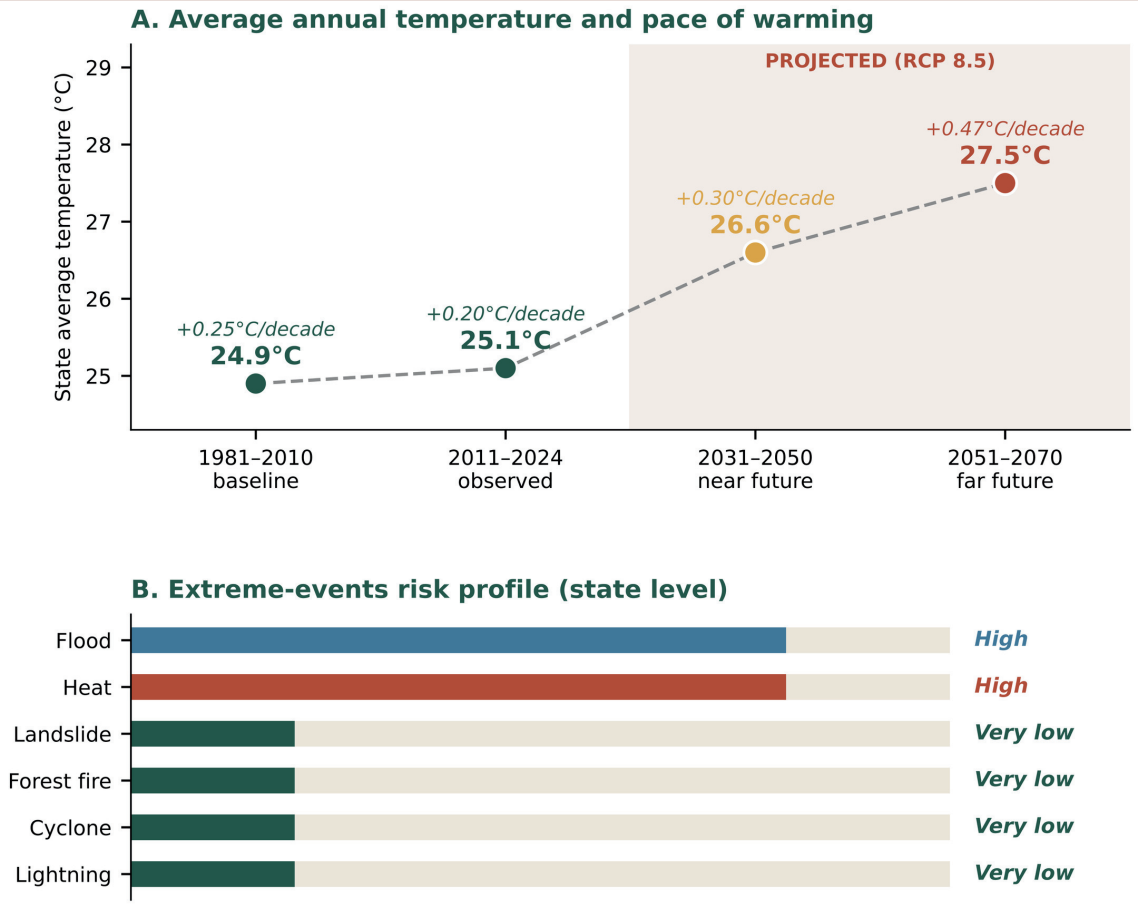


Figure 7.2. Temperature trajectory and extreme-events risk profile for Uttar Pradesh under RCP 8.5, redrawn from values transcribed from the CRAVIS state dashboard (CEEW, 2026d; TRI, 2026k). Values are unweighted district averages as displayed on the dashboard.

The two hazards fall on different parts of the state and sometimes on the same place. In the north and east, heavy rain in the Himalayan foothills and flows from Nepal drive recurrent flooding across the Tarai and eastern districts (Government of Uttar Pradesh, n.d.). In the south, Bundelkhand endured nearly two decades of chronic water scarcity and repeated drought until an early and heavy 2025 monsoon flooded the same fields and destroyed the kharif crop (Down To Earth, 2025). Table 7.1 sets these hazards against what the assessment already report.

Table 7.1. Extreme events: the state outlook set against what villages already report. Village evidence from TRI (2026i).

Hazard	State outlook	What villages already report	Most exposed
Heat and hot nights	Rated high; more prolonged heat spells (CEEW, 2026d; Government of Uttar Pradesh, n.d.)	47°C heat waves scorching summer paddy and stressing dairy animals (Pakhodna); April heat cut assessment sessions short in Bahraich; heat waves almost every year for a decade (Karapithiya); new pucca houses hotter inside (Kaimokhar)	Elderly people, outdoor workers, women in field work, children
Floods and waterlogging	Rated high; about 30% of the state flood-prone (Government of Uttar Pradesh, n.d.)	Floods almost every monsoon (Manjhra); fields under water for 3–5 days last year (Ranjit Gadhi); Yamuna overflow (Pakhodna); waterlogging or floods in 16 villages	Low-lying hamlets; farmers at harvest; settlements without drainage
Drought, dry spells and late monsoon	More frequent droughts in Bundelkhand and the Vindhyan zone	Monsoon arriving about a fortnight later (Kaimokhar, Alragoura); drought-like year in 2022 (Belhat); three crops cut to two for want of water (Bagheda Khurd)	Rain-fed smallholders; livestock keepers
Groundwater drought	59 of 836 blocks over-exploited and 46 critical (CGWB, 2024c)	Water at 150–200 ft against 75 ft fifteen years ago (Pathra); 250–320 ft against 60 ft in memory (Dindaspur); up to 600 ft in some hamlets (Belhat)	Households without their own pump; women and girls fetching water
Unseasonal rain, hail and pests	More heavy-rain days projected (CEEW, 2026d)	Rain in October 2025 sprouted paddy in the field before harvest (Belhat); hailstorms every two to three years and insect attacks each winter (Devghat)	Farmers at harvest; tenant and landless cultivators

7.1.3 Why vulnerability here is easily under-counted

Uttar Pradesh ranks 17th among 35 states and union territories on CEEW's Climate Vulnerability Index, with a score of 0.269 (Mohanty and Wadhawan, 2021), yet a related assessment places more than half its districts in the high category for climate hazard bearing on health (CEEW and UNICEF, 2025). Both can be true because the index is weighted towards acute disasters, while much of the state's burden is chronic and spread across a very large population. Poverty has fallen fast: the share of people who are multidimensionally poor fell from 37.68 per cent in 2015–16 to 22.93 per cent in 2019–21, and about 3.43 crore people left multidimensional poverty, the largest decline of any state (NITI Aayog, 2023). Even so, nearly one resident in four still lives with overlapping deprivations. Gender runs through all of it: a sex ratio of 912, female literacy about twenty points below male (Census of India, 2011c), and women increasingly running farms where men have migrated, although women operate only about 14 per cent of the country's agricultural holdings (Ministry of Agriculture and Farmers Welfare, 2019).

7.1.4 Method: treating memory as evidence

Assessments took place between February and May 2026, in separate groups of elders, SHG women, youth and mixed participants, using memory and resource mapping, transect walks and decadal timelines. Where attendance was recorded, in ten villages, 494 people took part; in the seven that recorded gender, 45 per cent were women.

The outputs are 20 village landscape reports and 20 climate-integrated GPDP drafts, each with a three-tier action plan (TRI, 2026i; 2026j).

7.2 Landscape trends and paradoxes

7.2.1 Key trends across the eight Jeevan Tatva

Wildlife declined in 19 of the 20 villages analysed and water in 18, while community institutions improved in 14 and infrastructure in only 4 (Figure 7.3; Table 7.2).

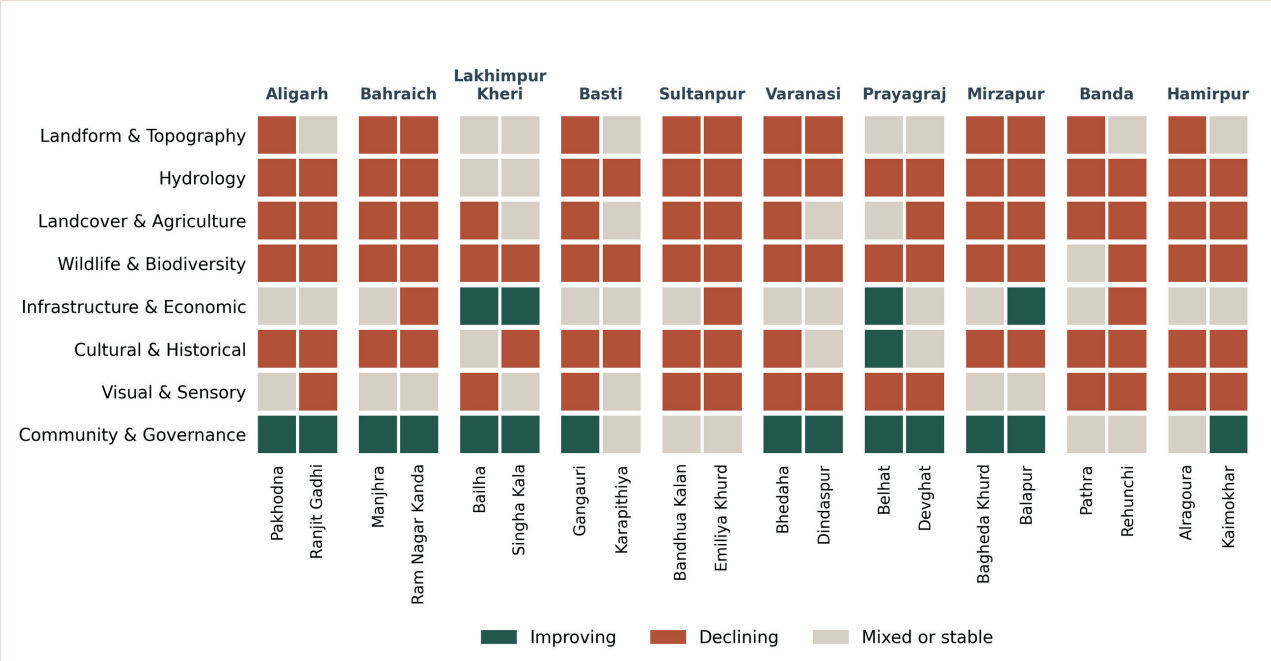


Figure 6.3. Trend direction for each Jeevan Tatva theme, by village and district, in three categories: improving, declining, and mixed or stable. Source: TRI (2026f).

Table 7.2. The eight themes, using each report's own trend direction. Source: TRI (2026i).

Theme	Improving	Declining	Mixed or stable	What the reports say
Landform & Topography	0	12	8	Fields levelled, hillocks cut, ponds and drainage channels filled; quarrying and blasting in the hills (Balapur); surface stable on the Bundelkhand plateau and in parts of the Tarai
Hydrology	0	18	2	Groundwater falling, ponds and wells silted or dry; mixed only where taps now reach every house (Bailha, Singha Kala)
Landcover & Agriculture	0	16	4	Paddy, wheat, sugarcane and potato replacing millets and pulses; chemical inputs rising; mixed where mechanisation and land consolidation raised yields
Wildlife & Biodiversity	0	19	1	Vultures, sparrows, frogs, earthworms and pollinators declining; nilgai and wild boar raiding crops; Pathra mixed, as a Forest Department plantation has grown
Infrastructure & Economic	4	3	13	Roads, pucca houses, toilets, electricity and taps valued, but weighed against irregular power, lost trees, rising costs and migration
Cultural & Historical	1	16	3	Kajri, Birha, Sohar and Nautanki fading; chaupal and collective festivals thinning; Belhat's 400-year Kushti tradition still thriving
Visual & Sensory	0	13	7	Heat, dust, stubble smoke and pesticide smell; cleaner lanes and sanitation where reports record mixed
Community & Governance	14	0	6	SHG, VO and CLF networks strong; women more present in Gram Sabhas; mixed where local organisation is described as weakening

As in the other states, the natural and cultural systems that no single programme looks after as a whole have declined. Uttar Pradesh differs in one respect: most villages record infrastructure as mixed, not improving. They value their roads, houses and taps, but set them against felled trees, hotter homes, irregular power and the departure of young people. Some gains stand out: forest cover has grown where the Forest Department protected a plantation (Pathra), caste discrimination has markedly reduced (Bailha), and village meetings are now held regularly (Bhedaha).

7.2.2 Water: the submersible race and the vanishing pond

Every village described a shift from shared wells and ponds to household pumps. In Pakhodna all irrigation now comes from private electric submersibles; Ranjit Gadhi counts 139 of them, and Bandhua Kalan 45 private tubewells against one government tubewell. Depths have followed (Figure 7.4). Pathra's water table has fallen from 75 feet fifteen years ago to 150–200 feet; Dindaspur's from within 60 feet in memory to 250–320 feet; in Belhat it ranges from 180 to 600 feet by hamlet.

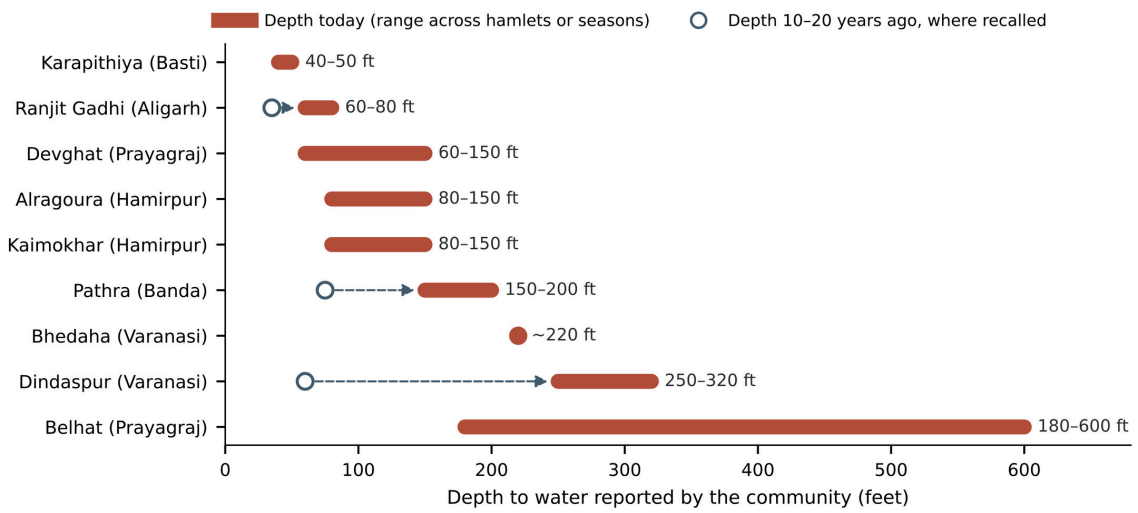


Figure 7.4. Depth to groundwater reported by communities in the nine villages that gave figures. Source: TRI (2026i).

Ponds have gone the same way: 18 villages report them lost, silted or dry. Bandhua Kalan's ponds have fallen from 18 to 6, Gangauri has lost 15–20 small ponds and its drainage channels, and Karapithiya's pond has been farmed over until none remains. In the Tarai this produces a paradox that Manjhra's report names directly: the village floods almost every monsoon and runs short of water every summer, because the ponds, fallow and commons that once held the rain are gone.

> *"The ponds and the wells used to stay full much longer. Now they dry up quickly."*
> Community statements, Manjhra and Ram Nagar Kanda

State data show the pattern at a coarser scale. The Central Ground Water Board's 2024 assessment classifies 59 of the state's 836 blocks as over-exploited, 46 as critical and 165 as semi-critical, with about 70 per cent of extractable groundwater in use (CGWB, 2024c). The same assessment found arsenic above permissible limits in about 7 per cent of samples, uranium in 8 per cent, nitrate in 9 per cent and fluoride in 6 per cent. Villagers describe stony water (Rehunchi), salt-crusted soil (Alragoura) and water whose taste varies from house to house (Belhat, Devghat), so testing would be a sensible first step.

7.2.3 Transitions in tension

In Pakhodna, Ranjit Gadhi and Bandhua Kalan, a pump in every field gives each family water on demand while the shared wells and ponds fail (Table 7.3).

Table 7.3. Transitions in tension. Source: TRI (2026i).

Tension	What villagers described	Where	Opportunity
A pump in every field, less water for all	Household pumps give each family water on demand, while the table falls and shared wells and ponds fail.	Pakhodna, Ranjit Gadhi, Bandhua Kalan, Balapur	Village water budgets; solar pumps paired with recharge.
Floods in August, scarcity in May	Filled ponds and drains leave rain nowhere to soak in, so the same village floods and then runs dry.	Manjhra, Ram Nagar Kanda, Gangauri, Ranjit Gadhi	Pond revival and drainage planned together.
Wider roads, fewer trees	Road widening felled 70–80% of trees along the corridor in Rehunchi and 150–200 trees in Kaimokhar.	Rehunchi, Kaimokhar, Alragoura	Compensatory planting with the road agencies.
Pucca homes, hotter homes	New houses end fire and snake risk, but hold heat where thatched and mud homes let people breathe.	Kaimokhar, Ranjit Gadhi, Singha Kala	Cool-roof and shade planting in housing programmes.
More grain, less nourishment	Machines, chakbandi and chemicals raised yields, while farmers describe crops as disease-prone and food as less nourishing.	Singha Kala, Kaimokhar, Pathra	Soil testing and natural farming clusters.
Development pressure on land	The Jewar airport is pulling land out of farming; quarry blasting cracked house walls.	Ranjit Gadhi, Balapur	Gram Sabha land-use resolutions; blasting safeguards.

7.2.4 Four systems loops that recur across the state

The reports describe four self-reinforcing loops that feed one another: a race for private submersibles, flood and scarcity as one system, the loss of earthworms to chemicals and smoke, and a migration drain (Figure 7.5).

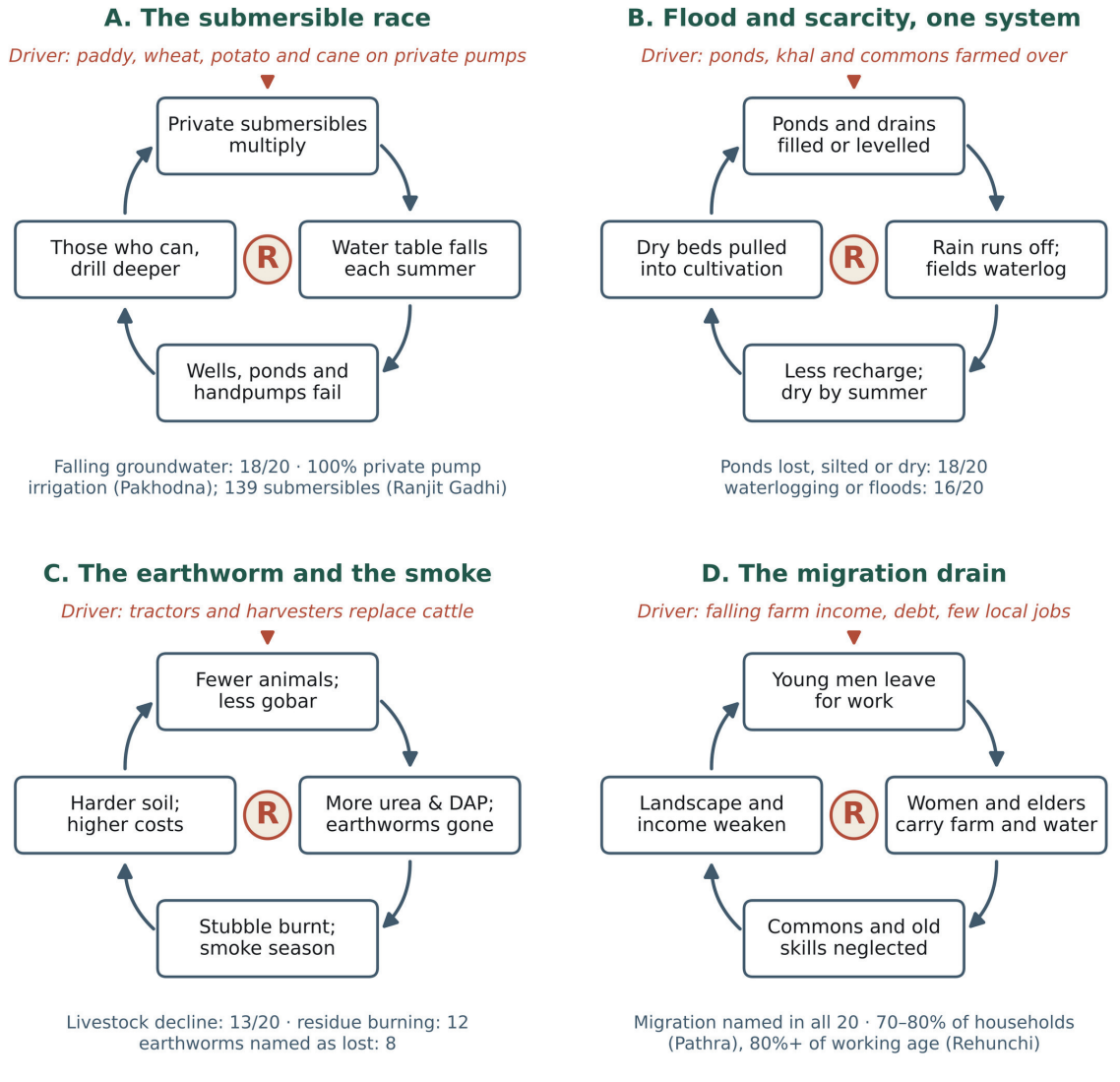


Figure 7.5. Four state-level systems loops. R = reinforcing loop. Counts show the number of village reports (of 20) that record each link. Source: research team synthesis of TRI (2026i).

The submersible race. Water-hungry paddy, wheat, potato and sugarcane on private pumps lower the water table each summer. Shared wells and handpumps fail first, so those who can afford it drill deeper, and those who cannot buy water or leave.

Flood and scarcity, one system. Ponds, drainage channels and commons have been filled or farmed over, and roads were built without enough culverts. Rain now runs off and waterlogs fields instead of soaking in, the ground holds less, and dry pond beds are pulled into cultivation.

> *"Twenty years ago the soil was soft, fertile to the touch; cow dung manure went into it and the earthworms were there. Now the soil has gone hard and the earthworms have finished."*
> Community record, Kaimokhar

The migration drain. Falling farm income and debt push young men out: 70–80 per cent of households in Pathra have someone away, more than four-fifths of Rehunchi's working-age people migrate, and about 60 per cent of households in Devghat send labour out. Women and elders are left to run farms and fetch water, and the upkeep of ponds, commons and old skills weakens. The counterweight is institutional: at least 360 SHGs in the 13 villages that recorded a count, village organisations and cluster federations, and Panchayats that have named their own priorities.

> *"There is nothing to do here: either farm, or leave the village."*
> Youth group, Ranjit Gadhi

7.3 Green value chains and the rural bioeconomy

7.3.1 Ten opportunities named by communities

Organic inputs and SHG micro-enterprise are named in all 20 reports, and solar irrigation is asked for most strongly in Bundelkhand (Table 7.4).

Table 7.4. Ten green value chains named by communities, described against the six readiness factors. "Villages" = number of village reports listing the chain (approximate keyword coding). Source: TRI (2026i; 2026j).

Value chain	Villages	Resource base and existing institutions	Market link and scheme hook	Women's role and climate co-benefit
ENERGY TRANSITION				
Solar irrigation and lighting	14	Solar pumps asked for in Bundelkhand (Pathra, Rehunchi, Alragoura, Kaimokhar); 50 solar streetlights (Ranjit Gadhi); first rooftops (Bhedaha)	PM-KUSUM; MNRE schemes	Cuts diesel and grid costs; best owned by groups and paired with water budgets
Biomass, pellets and biogas	7	Stubble and cane trash burnt today; pellet units proposed as youth enterprise (Pakhodna)	GOBARdhan; biomass programmes	Ends the smoke season; cleaner cooking fuel
CIRCULAR ECONOMY				
Organic inputs and vermicompost	20	Compost Sthal already built (Pakhodna); earthworm revival named as the priority (Kaimokhar)	Natural farming mission, PKVY, ATMA	SHG-run units; restores soil life and water absorption
Straw, residue and waste enterprises	15	Mushroom on paddy straw and fodder baling proposed (Ranjit Gadhi); plastic collection routed to Aligarh recyclers (Pakhodna)	SBM-G; Finance Commission grants	Women-led collection; cleaner air and water
SHG crafts and micro-enterprise	20	Brooms and mops (Gangauri); leaf-plate plant (Karapithiya); bangle and utensil work (Bandhua Kalan); tailoring (Alragoura)	NRLM-SVEP; ODOP; CM Yuva Udyami	Direct income for women; plastic substitution
NATURE-BASED SOLUTIONS AND BIOECONOMY				

Value chain	Villages	Resource base and existing institutions	Market link and scheme hook	Women's role and climate co-benefit
Agroforestry, orchards and nurseries	19	Field-boundary trees remembered everywhere; Forest Department plantation of 700–800 bigha (Pathra)	MIDH; VB-G RAM G; Green India Mission	Shade, cooling, fodder and fruit income
Livestock, dairy and goats	19	1,367 cattle (Ranjit Gadhi); 90% of households keep cattle (Devghat); indigenous breeds retained (Rehunchi)	Rashtriya Gokul Mission, NLM, dairy federation	Women manage animals; rebuilds the manure cycle
Millets, pulses and seed banks	12	Kodo, sawa, mejhuma and tisi remembered (Gangauri); heritage rice and seeds (Bhedaha); mota anaaj fallen to 10–15% of area (Rehunchi)	UP Millets Revival Programme, budgeted over four years from 2023, with mini-kits of sawa, kodo, madua, jowar and bajra (District Administration Ghaziabad, 2026)	Women as seed custodians; low water need; nutrition
Fisheries on restored ponds	14	Fish, frogs and turtles gone from ponds and canals; ponds to be desilted under most plans	PMMSY; VB-G RAM G for pond works	Turns restoration into income; protein
Forest produce, honey and flowers	12	Tendu, mahua, chironji and gum (Devghat, Belhat); floriculture emerging (Bagheda Khurd); honeybees declining (Pathra, Bagheda Khurd)	MFP support; National Beekeeping and Honey Mission	Women and landless regain a forest income; pollination

Organic inputs, trees and livestock already have SHGs behind them and need working capital, nurseries and veterinary access. Straw enterprises could end the smoke season while paying young people. Solar irrigation, strongly requested in Bundelkhand, works best as group-owned pumps with a village water budget, so that cheaper pumping does not speed up the submersible race.

7.3.2 Distinctive demands from across the state

Pakhodna wants private submersibles registered and moved to solar through village cooperatives, and Manjhra asks that its flood and its dry season be planned as one problem (Table 7.5).

Table 7.5. Distinctive community demands. Source: TRI (2026i; 2026j).

Theme	Demand	Village	What it tells planners
Water	Register and regulate private submersibles; move them to solar through village cooperatives	Pakhodna	Readiness for shared water rules
Water	Treat the flood and the dry season as one problem; raise flood-route paths	Manjhra	Drainage and recharge planned as one
Water	Re-open the old drainage line that carried the village's water to the Karnawati	Bagheda Khurd	Traditional hydrology as a design guide
Land	A Gram Sabha resolution on land use and a community land register as airport-led conversion spreads	Ranjit Gadhi	Local land-use planning under growth pressure
Forest	Settle compensation for the 700–800 bigha Forest Department plantation; remove lantana and vilayati babul	Pathra	Forest gains that also work for villagers
Safety	Safeguards after quarry blasting cracked house walls; restore the filled hill pond	Balapur	Extraction and water linked
Heat	A shaded chaupal and street planting so the village can gather through summer	Manjhra	Shade as public infrastructure
Heritage	Keep the 400-year Kushti and Dangal tradition; eco-tourism around restored ponds	Belhat, Ranjit Gadhi	Culture as livelihood
Wildlife	Sanctuaries for displaced wildlife; road safety on newly widened roads	Singha Kala	New risks named alongside new gains
Equity	Name women's water and fuel journeys as a plan line to be reduced	Manjhra, Ram Nagar Kanda	Women's time as a planning metric

7.3.3 Who bears the change

Several reports break heat down by group, and elderly people stand out: heat stress now reaches them indoors in Pakhodna, Ranjit Gadhi, Pathra and Gangauri (Table 7.6).

Table 7.6. Who bears which burden. Dark shading = named strongly or in several villages; light shading = named in one or two; grey = not recorded. Source: TRI (2026i). "Not recorded" means the reports are silent, not that the burden is absent.

Burden	Women	Elderly	Children	Youth	Landless and smallholders
Heat	Outdoor work harder in summer (Ranjit Gadhi, Pathra)	Heat stress, now also indoors (Pakhodna, Ranjit Gadhi, Pathra, Gangauri)	Outdoor play reduced; heat discomfort (Ranjit Gadhi, Gangauri)	-	Labourers avoid peak afternoons (Gangauri, Manjhra)
Water scarcity	Walking further to fetch water (Manjhra, Ram Nagar Kanda)	-	-	-	Water tied to private pumps; unequal access (Pakhodna, Ram Nagar Kanda)
Fuel and fodder	Longer journeys for fuel and fodder (Manjhra, Ranjit Gadhi); forest income lost (Gangauri, Balapur)	-	-	-	Loss of forest income fell hardest on landless households (Gangauri, Balapur)
Chemical exposure	-	-	-	-	Diabetes, blood pressure and cancer linked to chemical food (Pathra); illness rising with fertiliser use (Ranjit Gadhi)
Knowledge loss	Women's songs such as Sohar fading (Bandhua Kalan)	Seed, rain and medicinal knowledge held only by elders (Manjhra, Ram Nagar Kanda); few keep the chaupal (Ranjit Gadhi)	-	Migration described as compulsion, not choice (Ram Nagar Kanda, Ranjit Gadhi)	-

Persons with disabilities, single women and landless households (about 350 in Dindaspur, 195 in Bhedaha) also need attention; in Dindaspur, waterlogging is concentrated in the Scheduled Caste and Muslim settlements.

7.3.4 Gender and the changing landscape

Women's public role has grown through SHGs: about 80 per cent of women in Alragoura and 73 per cent in Kaimokhar belong to one, Belhat has six women among its thirteen ward members, and in Bhedaha women report much greater freedom of movement than before. At the same time, migration has left women running farms and households: Ranjit Gadhi's population is about 60 per cent female, which its report attributes to male migration. Water, fuel and fodder still fall mainly on women, and pay is unequal: in Bagheda Khurd women hold about a fifth of decision-making roles and earn ₹300 a day against ₹400 for men.

> *"The weight of water and of housework on the women goes on increasing, slowly, slowly."*
> Community statement, Ram Nagar Kanda

Table 7.7 reads the evidence through the Gender at Work framework (section 3.7).

Table 7.7. The Gender at Work framework applied to the 20 villages. Framework: Rao and Kelleher (2005); Rao et al. (2016). Evidence: TRI (2026i; 2026j).

INDIVIDUAL	
Consciousness and capabilities · informal Changed: women moved from seclusion to participation (Chikali, Sali, Mor); women contest elections (Ekalbara). Still emerging: female literacy is 52% against 83% for men in Dedla, and far lower in Mor and Naharpura; women's knowledge of food, seeds and animals is seldom treated as expertise. Next step: literacy drives already planned in two villages; women as facilitators of the assessment and keepers of the sentinel record.	Access to resources · formal Changed: SHG credit has reduced reliance on moneylenders (Sukhedi); taps at home lifted a daily burden (Chikali, Dedla, Mor); land increasingly registered in women's names (Naharpura). Still emerging: land in women's names was historically absent (Mor); borewells and pumps follow land ownership. Next step: joint titles; group-owned solar pumps; count working taps alongside connections.
SYSTEMIC	
Norms and deep structure · informal Changed: SHGs have eased caste barriers (Ekalbara, Ratanpur, Sagonia) and now lead 71 of the 78 community-level actions in the GPDP drafts. Still emerging: sex ratio of 892 and child sex ratio of 856 in Dedla, and a male-skewed ratio in Naharpura; women in Chikali describe new fear of outsiders after dark; water and fuel remain women's work. Next step: paid stewardship days through VB-G RAM G; a Gram Sabha commitment to share water and fuel work within households; safety on village paths.	Rules and policies · formal Changed: women in elected posts (Sukhedi); village organisations and cluster federations in every assessment block give women a formal platform. Still emerging: most schemes are designed at household or landowner level, and climate actions in the GPDP drafts carry no gender tag yet. Next step: gender-tag the climate-integrated GPDP; a women's quorum for water and commons resolutions.

7.4 Community indicators and critical parameters

7.4.1 What villagers know: memory as a planning resource

In Ranjit Gadhi farmers now pollinate their cucurbits by hand, and the village still remembers the frogs it heard at night (Table 7.8).

Table 7.8. Knowledge the villages hold. Source: TRI (2026i).

Kind of knowledge	Examples from the reports	How planning can use it
Water structures and lifting	Dhekuli and bedi (Gangauri), dikuli (Singha Kala), and mot, nar and chua (Bagheda Khurd) for lifting water; khal drainage channels (Gangauri); the hill pokhra (Balapur)	Revive proven, low-cost structures; map old drainage lines before new works
Seasonal and song calendars	Kajri of Sawan and the swing (Balapur, Bagheda Khurd); Kajri-Alha at Panchami (Emiliya Khurd); Sohar (Bandhua Kalan); Kushti each Shraavan (Belhat); Teej swings and Ramleela (Pakhodna)	Time works around festivals and harvests; treat fading songs as a sign of lost seasons
Living indicators	Earthworms in the soil (Kaimokhar); frogs at night (Ranjit Gadhi); fireflies (Bhedaha, Kaimokhar); Sarus crane visits (Belhat);	Simple, trusted measures of soil and ecosystem health
Seeds and food	Kodo, sawa, mejhuma and tisi (Gangauri); sanwa, mansuriya and an aromatic rice (Bhedaha); mahua, jowar and jumtha (Pathra); mota anaaj (Rehunchi)	Seed banks and millet plans built on local varieties
Sacred and heritage ecology	Patra Bagh neem grove (Pathra); temple groves (Pakhodna); Hukka and chaupal protocols (Ranjit Gadhi); the Devghat mela calendar	Protect groves and gathering places as shade and commons
Community diagnosis	“The flood and the scarcity are one system” (Manjhra); water “leaves earlier” than before (Ram Nagar Kanda); “If the forest survives, the	Baseline hypotheses for monitoring and research
Local records	Groundwater at 75 ft fifteen years ago (Pathra); the flood of 1994 (Devghat); monsoon a fortnight later (Kaimokhar); wages	Village-owned early warning, checked against official data
Local frameworks	The Jan–Jangal–Jameen–Jal–Janwar frame (Balapur); four headings per chart: what changed, why, its effect and what to do first	Plans written in the community’s own categories

7.4.2 Sentinel indicators and sensory findings

Rehunchi's Run Nadi has fallen from about two metres deep to half a metre (Table 7.9).

Table 7.9. Community sentinel indicators. Source: TRI (2026i).

What villagers watch	What has changed	Where	What it signals
Depth at which water is struck	75 to 150–200 ft; 60 to 250–320 ft; 30–40 to 60–80 ft	Pathra, Dindaspur, Ranjit Gadhi	Village-scale aquifer stress
How long ponds hold water	Dry earlier in the year; 18 ponds to 6	Ram Nagar Kanda, Manjhra, Bandhua Kalan	Loss of storage and recharge
River depth	Run Nadi from about 2 m to 0.5 m	Rehunchi	Loss of base flow
Earthworms in the soil	Gone or rare	Kaimokhar, Pakhodna, Alragoura, Pathra	Declining soil life
Frogs, fish and turtles	Gone from ponds and canals	Ranjit Gadhi, Pathra, Bagheda Khurd	Polluted, short-lived water
Sparrows, vultures, fireflies	Rarely seen or heard	Pakhodna, Kaimokhar, Bhedaha, Balapur	Pressure on food chains
Bees and hand pollination	Farmers pollinating cucurbits by hand	Ranjit Gadhi	Pollinator loss reaching yields
Monsoon onset	About a fortnight later	Kaimokhar, Alragoura	Shifting sowing window

7.4.3 Critical parameters for the state-wide view

Table 7.10. Critical parameters. Village evidence from TRI (2026i; 2026j); state figures as cited.

Parameter	What the 20 villages show	What it suggests
Heat	Heat named in every report; 47°C heat waves (Pakhodna); elderly heat stress now also indoors; shade lost to felling.	Heat protocols for elderly people and outdoor workers; shade planting.
Extreme weather events	Annual floods (Manjhra); drought-like 2022 and untimely October 2025 rain (Belhat); hail (Devghat); later monsoon (Bundelkhand).	Plan for flood and dry spell in one year.

Parameter	What the 20 villages show	What it suggests
Climate knowledge and preparedness	Nine reports note that no disaster-risk plan exists.	A Gram Panchayat DRR plan in every GPDP.
Water security and quality	Falling groundwater and lost ponds in 18 each. Statewide, arsenic above limits in about 7% of samples, uranium 8%, nitrate 9% (CGWB, 2024c).	Village water budgets; water-quality testing.
Migration and income	Named in all 20; 70–80% of households (Pathra), about 60% (Devghat), about 40% (Karapithiya).	VB-G RAM G: 125 days, with a water-security domain, from 1 July 2026 (Drishti IAS, 2026a).
Land, forest and tenure	Kol families recorded as SC (Belhat); forest compensation unsettled (Pathra); airport-led land conversion (Ranjit Gadhi).	Add tenure and women's titles to the Community-led Character Assessment Tool.
Health and nutrition	Diabetes, blood pressure and cancer (Pathra); dengue (Karapithiya); more mosquitoes (Balapur). Statewide, 50% of women were anaemic, 40% of young children stunted and 16% of households insured (IIPS, 2021d).	Millets in anganwadi, school and ration meals; health outreach linked to water and waste work.
Household energy	Power 4–8 hours a day in Banda villages, 24 hours in Dindaspur; LPG in 60% of Pathra homes but cost limits use.	Solar for pumping and lighting.
Livestock, fodder and commons	Livestock decline in 13 villages; grazing gone (Emiliya Khurd, Manjhra); strong herds in Ranjit Gadhi and Devghat.	Fodder plots; veterinary access.
Markets and processing	Aligarh mandi, Girgitti Chauraha gud mandi, Delhapar and Koraon markets; local crafts and flowers.	Village-level processing; FPO links.
Mining and industrial activity	Sand mining (Pathra); quarry blasting (Balapur); brick kilns (Alragoura, Balapur, Karapithiya); factory smoke (Bailha).	Gram Sabha oversight; pollution checks.
Youth and social wellbeing	"Nothing to do here" (Ranjit Gadhi); disputes moving to courts (Bagheda Khurd); alcohol use rising (Alragoura).	Green skilling; village dispute forums.
Scheme convergence and finance	Tier 3 draws on VB-G RAM G, NRLM, ATMA, CAMPA, PMKSY, Swachh Bharat, PM-KUSUM and Atal Bhujal Yojana.	Converge at village level.

7.5 Tiered action plans

Each village's GPDP draft sorts its actions into three tiers: what the community can do alone (the Community Action Plan), what needs modest support, and what needs scheme convergence (the Departmental Action Plan) (TRI, 2026j). Across 20 villages the drafts hold 454 actions (Figure 7.6). The 152 Tier 1 actions need no external funds.

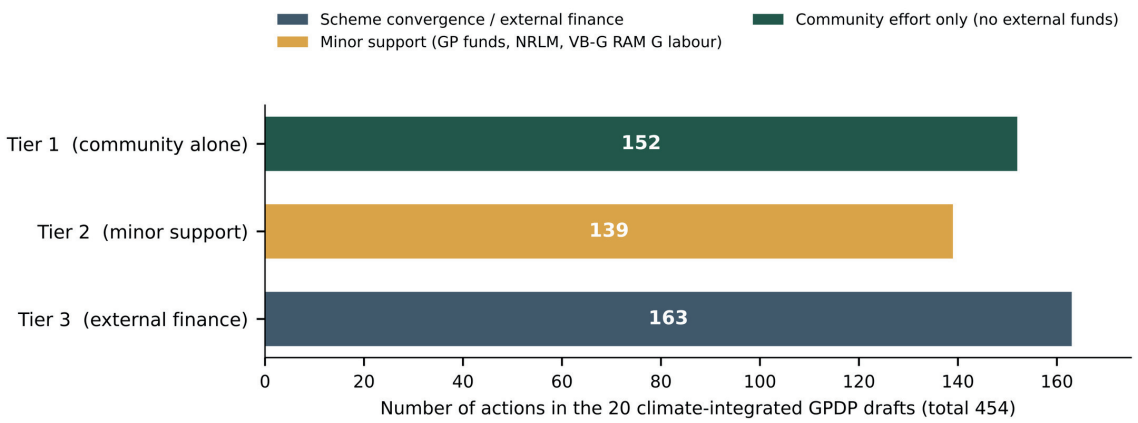


Figure 7.6. The 454 actions by tier and source of support. Source: TRI (2026j); research team coding.

Table 7.11. Top five activities per tier. Counts come from a keyword coding of the 454 actions and are approximate; village disaster-risk plans and groundwater regulation (12 plans each, Tier 3) also recur. Source: TRI (2026j).

#	Activity	Plans (of 20)	Who leads	Source of support
TIER 1 · The community can do it alone · no external funds				
1	Plant and protect trees on bunds, lanes and school land; norms against felling	20	SHGs, youth, Gram Sabha	Community labour
2	Return to gobar and compost; pledges to stop burning stubble	16	Farmer groups, SHGs	Community labour
3	Soak pits, field bunds and shramdaan on ponds and wells	15	Gram Sabha, youth	Community labour
4	Record and revive elders' knowledge, songs and festivals	13	Elders, youth, SHGs	Community
5	Water troughs and bird houses; watch and guard against crop raids	12	Youth, farmer groups	Community
TIER 2 · Minor support				
1	SHG vermicompost and bio-input units	19	SHGs, Krishi Sakhi	NRLM; ATMA; KVK
2	SHG and youth green enterprises and skilling	18	SHGs, youth	NRLM-SVEP; RSETI; DDU-GKY

#	Activity	Plans (of 13)	Who leads	Source of support
3	Nurseries and agroforestry on bunds	16	SHGs, Forest Department	Forest Department saplings; MIDH
4	Fodder, small livestock and pond fisheries	16	SHGs, households	NRLM; Animal Husbandry; PMMSY
5	Millet seed banks and demonstration plots	15	SHGs, farmer groups	UP Millets Revival Programme; ATMA
TIER 3 · Scheme convergence · external finance				
1	Pond rejuvenation and recharge at scale	20	Rural Development, Minor Irrigation	VB-G RAM G; Amrit Sarovar; PMKSY-Watershed; Atal Bhujal
2	Large-scale plantation and forest restoration	18	Forest Department	CAMPA; Green India Mission
3	Drainage, sanitation and waste systems	16	Panchayati Raj, Gram Panchayat	Swachh Bharat (Gramin); Finance
4	Solar irrigation and clean energy	14	Energy Department, UPNEDA	PM-KUSUM; MNRE
5	Livestock and dairy development	13	Animal Husbandry Department	Rashtriya Gokul Mission; NLM

7.5.1 What this asks of Samaj, Sarkaar and Bazaar

Table 7.12. What the findings invite from each stakeholder.

Who	What the evidence invites	A first step
Samaj: Gram Sabhas, SHGs, elders, youth	Agree norms on pumps, stubble burning and tree felling; keep the sentinel record; share water and fuel work within households.	Pond shramdaan and a no-burn pledge before the next kharif harvest.
Sarkaar: Panchayati Raj and Rural Development	Use the climate-integrated GPDP as a source of VB-G RAM G and Amrit Sarovar works; add a village DRR plan; gender-tag climate actions.	Include Tier 2 pond and recharge works in the next Gram Panchayat plan.
Sarkaar: Agriculture and Horticulture	Use the Millets Revival Programme and natural farming mission in the assessed blocks; support straw and residue enterprises.	Millet seed banks and a straw-enterprise pilot in each district.
Sarkaar: Jal Shakti, Minor Irrigation, Ground Water Department	Add village water budgets to block assessments; test for arsenic, uranium, nitrate and fluoride; link piped schemes to recharge.	Water-quality testing in the 20 villages.

Who	What the evidence invites	A first step
Sarkaar: Forest, Energy, Public Works	Settle forest-use questions; compensatory planting along widened roads; pair PM-KUSUM pumps with water budgets.	Roadside replanting in Rehunchi and Kaimokhar.
Bazaar: FPOs, dairy federations, mandis, recyclers	Buy millets, milk, straw and recyclables at stated prices; locate first processing in villages.	Collection points at the nearest mandis and haats.
Funders and CSR	Support what schemes cover less: facilitation, working capital, nurseries, monitoring.	Blended finance for solar groups and straw enterprises; support for women's stewardship

A practical starting point is Manjhra, which has asked that its flood and its dry season be planned as one problem.

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Transform Rural India

“This is the first time we have looked at our village, and all that has changed in it, together — as one community.”

A self-help-group member, LCAT field conversations

ABOUT THIS REPORT

Reading the Landscape — a national consolidated report on the Community-Led Landscape Assessment Tool (LCAT) pilots across Chhattisgarh, Jharkhand, Madhya Pradesh and Uttar Pradesh, 2026

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