Advancing climate adaptation planning

MSC's experience with implementing the locally led adaptation approach with Particularly Vulnerable Tribal Groups (PVTGs)

April 2025

MSC
MicroSave Consulting

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List of acronyms

SL #	Acronyms	Expanded form
1	PVTG	Particularly vulnerable tribal group
2	LLA	Locally-led adaptation
3	CAP	Community adaptation plan
4	GPDP	Gram Panchayat Development Plan
5	CSO	Civil society organization
6	FSP	Financial service provider
7	NGO	Non-governmental organization
8	PRI	Panchayati Raj Institution
9	BDO	Block Development Officer
10	NTFP	Non-timber forest product
11	MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act

SL #	Acronyms	Expanded form
12	FL-CRP	Financial literacy community resource person
13	VPRP	Village Prosperity Resilience Plan
14	GPPFT	Gram Panchayat Planning Facilitation Team
15	LSDG	Localization of Sustainable Development Goals
16	WASH	Water, sanitation and hygiene
17	MFI	Microfinance institution
18	DBT	Direct Benefit Transfer
19	SHG	Self-help group
20	RCP	Representative concentration pathway

Executive summary

S Situation

The particularly vulnerable tribal groups (PVTGs) comprise 75 of India's most marginalized communities among more than 700 scheduled tribes.

These communities depend on forest-based livelihoods, rainfed agriculture, and manual labor to survive. They are highly susceptible to climate change's effects, such as erratic rainfall, extended dry spells, and extreme weather events. Their remote and fragile environments, combined with limited access to healthcare and infrastructure, heighten their vulnerability to climate-induced health issues.

C Complications

Existing research on climate change's impacts generalizes findings across various tribal groups and provides a broad understanding at best. These groups have distinct lifestyles and traditional knowledge systems and depend on specific ecosystems, which generalized studies do not adequately represent. Moreover, studies that focus on general climate vulnerabilities overlook climate change's localized and nuanced impacts on PVTGs, leading to a lack of granular insights. As a result, specific challenges and adaptive strategies for PVTG groups remain underexplored.

Q Questions

We sought to understand how climate change impacts PVTGs and the adaptation options they could pursue. Specifically, we wanted to answer the following:

- What are the direct and indirect impacts of climate change on PVTGs?
- What resources can PVTGs access, and how do they currently use these resources to cope with the effects of climate change?
- How can local entities help identify adaptation strategies for PVTGs?

A Answers

MSC spent more than 800 in-person hours with 26 male and 26 female members of Juang, Korwa, and Sahariya PVTGs across three states. We found:

- Extreme heat and erratic rainfall impact water availability for household use, livestock, and agriculture, leading to crop failures and other impacts.
- The ecosystem services PVTGs rely on are depleting, and traditional coping strategies are insufficient to deal with climate change's growing impact.
- Alongside the implementation of community adaptation plans (CAPs) for immediate needs, entities, such as local government, CSOs, and FSPs, can help develop and implement medium- and longer-term adaptation options for PVTGs.

Detailed insights

Climate change-induced rainfall variability and extreme heat have been increasingly impacting the lives and livelihoods of PVTGs countrywide

The Juang in Odisha, Korwa in Jharkhand, and Sahariya in Rajasthan engage in rainfed agriculture in arid and semi-arid areas. They already face significant climate hazards that compound their existing vulnerabilities.

Our research suggests that PVTGs overwhelmingly perceive climate change today as increasing heat, reduced rainfall, extended dry spells, erratic precipitation patterns, and less predictable seasons.

These hazards directly impact water availability for household use, livestock, and agriculture, which leads to crop failures and negative impacts on natural resources. This can have significant repercussions for food security and PVTG livelihoods.

Direct impacts

- Water scarcity affects PVTG household needs, agriculture, and livestock care. This leads to reduced crop yields and livestock productivity.
- The impact of climate change on forests threatens traditional PVTG livelihoods as access to forest products diminishes. This results in decreased incomes from activities, such as gathering fruits and medicinal plants.
- All three tribes experience increased health issues, such as dehydration, skin diseases, and heat-induced illnesses, which they perceive as being linked to prolonged exposure to climate change-induced extreme temperatures.

Indirect impacts

- Rising medical expenses due to increased health issues force families to allocate limited financial resources, which reduces spending on essential needs.
- The increased reliance on market-purchased food and fodder due to failed harvests leads to financial strain and potential debt accumulation.
- The time people spend on traveling for water or healthcare reduces opportunities for wage labor or other income-generating activities. This worsens their economic vulnerability.

Detailed insights on the climate hazards can be found in the annexes.

The PVTGs' coping mechanisms based on traditional knowledge are inadequate to address their growing vulnerability to extreme heat and rainfall variability

The Juang, Korwa, and Sahariya use varied coping strategies to deal with extreme heat and erratic rainfall based on traditional knowledge and practices. Although these coping strategies help them manage some immediate impacts, they are not adequate to build their resilience.

Members of the Juang and Korwa tribes stay indoors during very hot days. They work outside only during the morning or evening hours. The Sahariya tribe is more used to extreme heat. People from this tribe wear cotton clothes and cover their heads during hot days.

The Sahariya and Korwa plant drought-resistant millets, such as *kutki* and finger millet, alongside paddy to diversify yields to manage risks of rainfall variability and its resulting impact on paddy.

The Korwa and Juang tribes use plastic sheets to protect their crops from post-harvest losses due to untimely rains.

Households in the Juang and Sahariya tribes store water in larger containers at home during summer to minimize water waste. Individuals carry their water bottles due to the lack of easy availability of drinking water facilities.

The Korwa tribe drink beverages, such as *aam panna*, water infused with black gram leaves, and palash flowers during the summer. Similarly, the Sahariya tribe consumes more curd, buttermilk, lemonade, and sugarcane juice during the summer.

Detailed insights on the coping strategies can be found in the annexes.

Our assessment of five livelihood capitals shows critical gaps that undermine the PVTGs' adaptive capacity

Human capital	Social capital	Natural capital	Physical capital	Financial capital
• More than 50% of men from the Juang tribe are only educated up till the 12th grade. Most Korwa and Sahariya men are illiterate. Women in these tribes are mostly illiterate. • Men possess skills in traditional crafts, such as marble fitting and woodworking, while women's skills are limited to activities, such as carpet weaving, broom-making, and making utensils from leaves.	• Juang and Sahariya men form age-based informal support groups. The Korwa tribe lacks any type of formal or informal groups. • Among the Korwa and some Sahariya communities, self-help groups are not functional.	• Deforestation has led to reduced access to forest resources. • The availability of non-timber forest products (NTFPs) has decreased. This has affected the communities' income sources.	• More than 50% of households across the three tribes still live in kutcha houses. • The water supply is inconsistent. It often requires long travel distances. Electricity supply is also unreliable or absent in many areas. • Access to government programs remains low due to their marginalization.	• Most adults have bank accounts, but their usage varies. Only some women use financial services. • People from the tribes rely heavily on informal lending networks, especially Sahariyas. This often leads to debt cycles. • Remittance inflows are low for most PVTG households.

Detailed insights on the livelihood capitals can be found in the annexes.

Despite the gaps, the tribes have identified additional activities that can help with their urgent and immediate adaptation needs through the CAPs

The Dorward framework highlights three sets of interventions that can enable PVTGs to transition from lower to higher resilient pathways. The CAP identified by Odisha's Juang tribe captures all three sets of interventions.

Adaptation options identified by the Juang tribe	Stakeholders involved	Cost	Timeline
Construction of pucca roads and improved drainage to deal with high-intensity rainfall	*Panchayat Sarpanch*	Unknown	Before monsoon
Increased advocacy with officials for a stable electricity supply	Tata Power Central Odisha Division Limited (TPCODL)	Unknown	Immediately
Improved access to government programs, such as the PM PVTG Development Mission and the Odisha PVTG Empowerment & Livelihoods Improvement Programme	*Panchayat* Sarpanch	INR 400 to 700 (Labor card + *Aadhaar* card)	Immediately
Training on financial literacy and skill development for young people, and work provision in the monsoon for income	FL-CRP, Tribal Development Agency, OLM (Odisha Livelihoods Mission) - Mission Shakti	Unknown	In the next few months
Replenishment of water sources, such as ponds and hand pumps	Block Development Officer (BDO), Panchayat Sarpanch	INR 40,00 to 50,000	Immediately
Increased advocacy with officials to ensure responsiveness to their needs, particularly around access to government programs that can help reduce climate vulnerabilities	Block Development Officer (BDO), Panchayat Sarpanch	Unknown	Immediately
Construction of check dams on streams to improve watershed and water availability	MGNREGA contractor	Unknown	By the next year

Hanging in: These activities address basic infrastructural needs and coping capacities for immediate adaptation needs.

Stepping up: These are activities to improve livelihoods and increase access to government programs, water resources, financial literacy, skill development, and advocacy can help PVTGs step up within their livelihoods.

Stepping out: These activities enhance watershed management to ensure long-term sustainability and resilience.

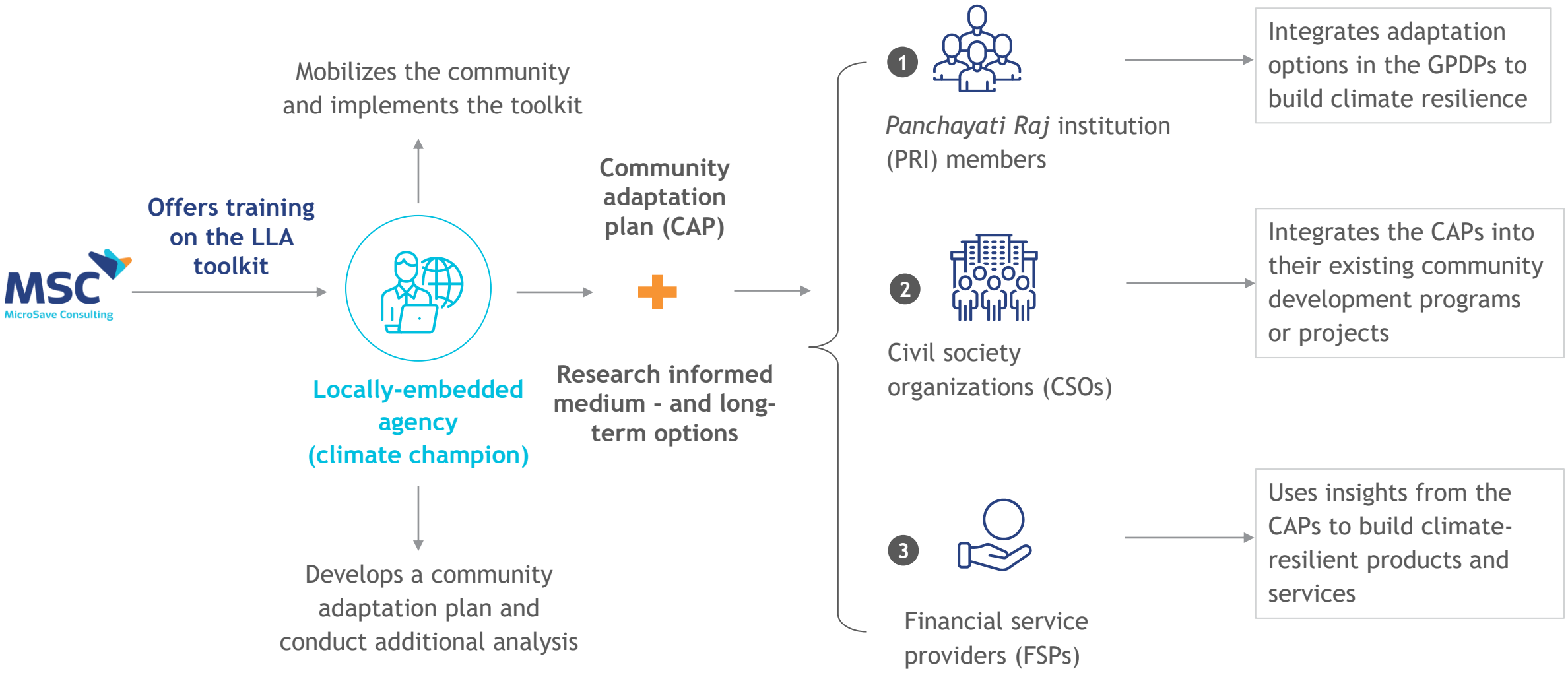
Refer to the annexes for more details on the Dorward framework.

Additionally, we identified additional packages of services that can strengthen PVTGs' resilience and shared them with local stakeholders

Location	Hanging in	Stepping up	Stepping out
Telkoi, Keonjhar, Odisha	Implement sustainable harvesting of forest products	Organize regular FL workshops and establish self-help groups to promote savings	Conduct specialized workshops in handicrafts, food processing, and local product marketing
	Strengthen existing health facilities with improved medical equipment, staff training, and regular health camps	Develop kitchen gardens and homestead gardens to increase food security	Implement integrated farming that combines crops, livestock, and agroforestry
		Improve irrigation facilities to enable farming during extreme temperatures	
Mahuadanr, Latehar, Jharkhand	Construct *pucca* houses and roads	Increase awareness of government programs and their use	Support the creation and scale-up of microenterprises through training and microfinancing
	Provide regular drinking water facility and stable electricity supply	Create better market linkages to sell forest produce	Create labor banks and skill-matching programs for monsoon employment
		Provide training in modern farming techniques and high-yield crop varieties	
Kishanganj, Baran, Rajasthan	Establish primary education centers and adult literacy programs	Construct check dams and implement rainwater harvesting systems	Launch community-led tree planting and forest protection initiatives
	Create village development committees and support groups	Install solar panels for households and community facilities	Provide specialized training in local crafts and technical skills
		Establish microcredit programs with fair interest rates to break cycles of debt	

These packages can be offered by different stakeholders, such as governments, CSOs, and FSPs. We unpack this in slides 12 to 15.

Local government, CSOs, and financial service providers can prove vital to the implementation of the CAPs and the additional package of services



For example, Gram Panchayat Development Plans (GPDPs) can integrate CAPs developed through our extensive LLA exercise

Step 1 Formation of Gram Panchayat Planning Facilitating Team (GPPFT) (May)

Step 2 Community-driven environment creation with inputs from *Bal Sabha*, *Mahila Sabha*, and Ward *Sabha* (May)

Step 3 Focus areas of planning based on nine themes of LSDGs (June)

Step 4 Data collection through Mission *Antyodaya* Survey (June)

Step 5 Situation analysis based on problems, needs, or resources available (Mid-July)

Step 6 Visioning exercise: The theme-wise *Sankalp* taken by the *gram panchayat* (Mid-July)

Step 7 Prioritization of activities and creation of development status report (end of July)

Step 8 Creation of resource envelope through awareness generation and mobilization (Mid-September to Mid-October)

Step 9 Integration of VPRP into GPDP and creation of special *gram sabha* for approval (end of October)

Step 10 Preparation of GPDP, its approval and upload on eGramSwaraj (end of December)

Engagement with PRI members

- We presented the CAP to the *sarpanch* and ward members of Saleikena village, Telkoi block, Keonjhar.
- We mapped the existing GPDP activities and proposed additional activities from the CAP to integrate into the GPDP for improved water security, livelihood diversification, and access to government programs.
- PRI officials were willing to integrate new climate-resilient activities developed from this adaptation planning into the next GPDP.

The entry point to integrate climate adaptation into GPDP through the CAP and additional research findings

The CSOs can help facilitate the CAPs through their integration into existing programs

Potential interventions for CSOs to build the climate resilience of PVTGs

- **Climate-resilient agriculture**
  - Promote agro-ecological farming systems, such as organic manure, traditional pest control, and agroforestry
  - Support alternative livelihoods, such as goat rearing, poultry farming, and aquaculture
  - Provide training in value-added processing of non-timber forest products (NTFPs)
  - Establish kitchen gardens and homestead food production for nutritional security
- **Water and natural resource management**
  - Implement watershed management projects to conserve water and prevent soil erosion
  - Promote reforestation programs to restore degraded lands and support livelihoods
- **Health, nutrition, and WASH**
  - Implement nutrition and WASH behavior change programs, such as participatory learning and action
  - Integrate WASH considerations into disaster preparedness, such as early warning systems
- **Capacity building and community empowerment**
  - Organize training for PVTG youth and women on sustainable farming, leadership, and disaster preparedness
- **Strengthened participatory local governance**
  - Support community-led planning for GPDPs with a focus on climate resilience and livelihoods

Engagement with CSOs

- We collaborated with two prominent NGOs, Gram Utthan and KIRDTI, to strengthen climate resilience among PVTGs in Keonjhar and integrate climate adaptation into their ongoing work.
- **Gram Utthan:**
  - The need for training on financial literacy and skill development for young people identified in this research can be integrated into Gram Utthan's Skill Training and Life Skill Education for Vulnerable Women and Adolescent Girls program. This program seeks to equip women and youth with sustainable livelihood skills.
  - Sustainable agriculture activities can be promoted through Gram Utthan's Trees for Agriculture, Resilience, and Upliftment program, which promotes agroforestry and climate-smart farming practices.
- **KIDTI:**
  - Construction of check dams on streams to improve watershed and water availability could become a part of KIRDTI's Watershed Management Projects, which seek to enhance groundwater recharge and soil moisture conservation.
- We are working to integrate climate-resilient measures into the program activities of both NGOs to ensure long-term benefits for PVTG communities.

Finally, inclusive financial services could help advance the implementation of resilience building activities for PVTGs identified in their CAP and our study

Barriers to the financial inclusion of PVTGs

Financial institutions, such as MFIs, could potentially support PVTGs in financing climate-resilient livelihoods. However, MFIs face significant challenges in reaching and serving these communities:

- **Limited presence:** MFIs are scarce in the Keonjhar district, particularly in areas inhabited by PVTGs. This restricts credit access for climate-resilient agriculture and alternative livelihoods.
- **Preference for local lenders:** PVTGs often choose local moneylenders because they offer easier access and flexible terms despite higher interest rates.
- **Financial literacy:** Many PVTGs lack the knowledge to use financial services effectively.
- **Lack of documentation:** A significant number lack essential identification documents required for MFI loans.
- **Regulatory challenges:** Regulations limit MFIs' ability to tailor financial products to meet PVTGs' specific needs.

Financial services can play varied roles in strengthening climate resilience

- **Savings at home** can provide quick access during climate emergencies, meet urgent needs when financial services fail, and help lower vulnerability to climate shocks.
- **Remittances** from migrants to their home communities can enhance adaptive capacities and provide vital resources during climate-related shocks. Collective remittances can be pooled to invest in community infrastructure that enhances climate resilience.
- **Loans from SHGs** can help with income smoothening, post-disaster recovery, and reconstruction. Moreover, members have the flexibility to default and not be penalized for it.
- **Loans, deposits, and insurance products from banks:** Following climate-related disasters, access to bank loans can facilitate quicker recovery efforts. Customized deposits and insurance for disaster events can reduce vulnerability. Firms that need larger loans can use these funds to restore their operations and invest in future protection.
- **Loans and insurance from MFIs:** MFIs can offer cheap and easier loans for reconstruction and recovery. Bundled parametric insurance with MFI loans can help households recover from climate-related impacts.

Research design considerations and tools implemented

Research design considerations

Research methodology

- The study involved qualitative primary research with the following PVTGs across three states:
  - The Juang tribe in Keonjhar, Odisha
  - The Korwa tribe in Latehar, Jharkhand
  - The Sahariya tribe in Baran, Rajasthan
- We used workshops and game-based tools in a focus group discussion (FGD) setting to gather insights.
- The study also included a review of secondary literature on climate variability, future projections, and the region's tribal communities.

Photo: MSC research team, April 2024

Research elements

Sample size: Over 800 person-hours with 63 respondents

Respondent type: Male and female members of PVTGs of the age group 15-60 years

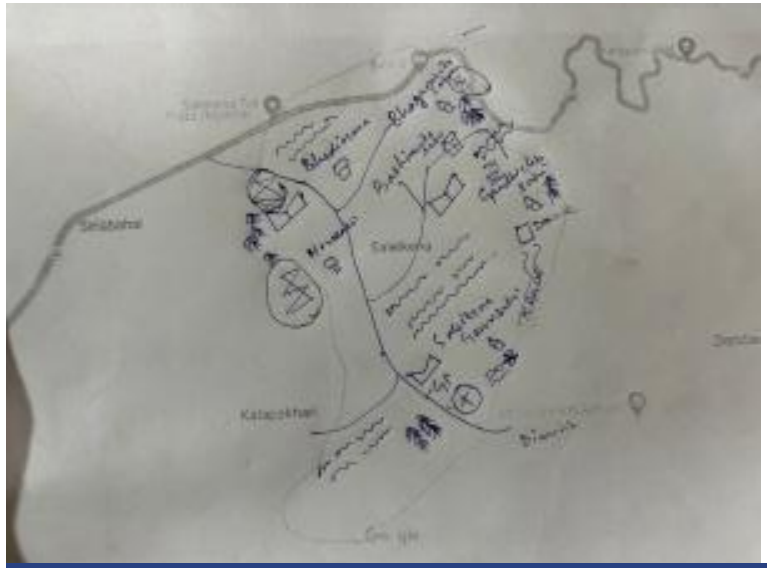
Other stakeholders interviewed: Sarpanch and ward members of Telkoi, BDO of Mahuadanr, Sarpanch of Bansthuni

Location	Tribe	Male respondents	Female respondents	PRI members	Total
Telkoi, Keonjhar, Odisha	Juang	6	6	7	**19**
Mahuadanr, Latehar, Jharkhand	Korwa	10	10	2	**22**
Bansthuni, Baran, Rajasthan	Sahariya	10	10	2	**22**

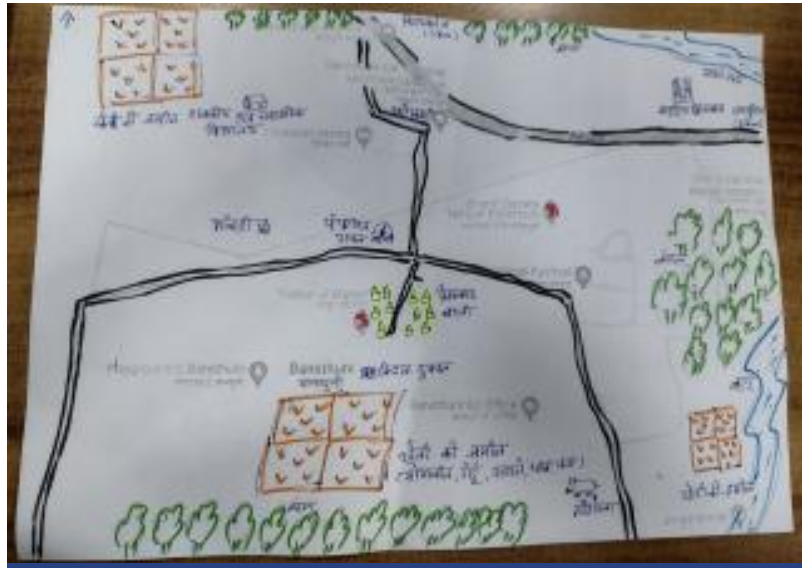
Choice of study locations

- We tested our tools in three blocks classified as PVTG blocks under the Aspirational Blocks Programme, which seeks to improve the quality of life and delivery of services in the country's most underdeveloped regions.
- The blocks covered as part of this study were:
  - Mahuadanr block, Latehar district, Jharkhand
  - Telkoi block, Keonjhar district, Odisha
  - Kishanganj block, Baran district, Rajasthan
- Within each of these blocks, we identified villages that had a significant population of PVTGs (more than 100 households).

Sohar, Mahuadanr, Jharkhand*



Saleikena, Telkoi, Odisha*



Bansthuni, Kishanganj, Rajasthan*

*These maps were created using the inputs obtained from the PVTGs in each study location as part of MSC's locally-led adaptation (LLA) toolkit.

Step-by-step approach for the implementation of the LLA tools

We used six tools with the tribal communities in each research location over a span of three days.

01

Tool 1: Mapping of climate hazards & exposure

This tool maps key facilities and visualizes hazard-prone areas, using hazard perception mapping to assess trends and impacts on livelihood assets over time.

02

Tool 2: Assessment of social vulnerability

This tool assesses community vulnerability through the Sustainable Livelihoods Framework, focusing on five capitals: human, social, natural, physical, and financial.

03

Tool 3: Identification of climate-related risks

This tool combines hazard and vulnerability assessments to identify key climate risks in the area and outline their direct and indirect impacts.

04

Tool 4: Identification of risk mitigation and adaptation options

This tool uses a snakes and ladders game to explain risk mitigation and adaptation, with snakes symbolizing risks and ladders representing mitigation options.

05

Tool 5: Prioritization of long-term adaptation options

This tool ranks adaptation options based on accessibility, affordability & availability.

06

Tool 6: Development of a Community Adaptation Plan

This tool creates a detailed plan for implementing prioritized adaptation options, outlining costs, timelines, and responsible actors for each.

Annexes

1. Detailed Insights from the Juang tribe in Keonjhar district, Odisha

Summary of findings from the Juang tribe in Odisha (1/3)

RQ1: What are the direct and indirect impacts of climate change on the lives and livelihoods of PVTGs?

Direct impacts:

- **Health issues**: The Juang tribe members experience health problems due to extreme heat such as dehydration, nausea, and fatigue.
- **Less water for households, livestock, and cultivation**: Reduced monsoon rainfall has led to water scarcity, which affects households, livestock as well as agricultural activities.
- **Low forest produce**: Extreme heat and low rainfall have led to a decline in the quality and quantity of forest products, which has reduced the dependence of the Juang tribe on forests over the years.

Indirect impacts:

- **Increased medical expenses due to health issues:** Members of the tribe have long commutes to go see a doctor if they fall sick during bad weather or hot days. This reduces the time available for wage labor and, thus their income. They can incur high expenses from paying for travel to government clinics.
- **Effect of reduced monsoon rainfall on households, crops, and livestock**: Reduced monsoon rainfall affects paddy yields and income, forcing women to travel farther for water. Unpredictable rainfall can also increase health issues due to water contamination, raising medical costs and reducing wage labor time. Drought can affect the availability of fodder for livestock, raising veterinary costs, and reducing milk production.
- **Reduced income from sale**: The reduced availability of *kendu* leaves, *mahua* fruits, and bamboo means lower income from the sale of these forest products.

Summary of findings from the Juang tribe in Odisha (2/3)

RQ2: What livelihood capitals are available to the PVTGs to help them respond to climate change risks?

- **Human capital:** 50% of participants attained up to 12th grade education, while older generations have lower educational levels. Men have skills in farming and wood cutting, while women are skilled in carpet weaving. Men work for 8 hours a day, 6 days a week, while women also work for 8 hours a day but for only about 10 to 15 days in a month.
- **Social capital:** Participants claimed age-based social groups for men. Women were members of Self Help Groups (SHGs) saving INR 20-100 monthly, women also had access to community assistance funds in emergencies from the SHGs.
- **Natural capital:** The tribe participants rely on forest resources like firewood and fruits (collected by men), and *kendu, sal leaves, and mahua* (gathered by women). Participants had kitchen gardens and small livestock, which provided food and occasional income.
- **Physical capital: Participants had a mix of** *pucca* and *kutcha* houses with clear preference for a pucca house, access to government build toilets, bicycles for both genders, auto-rickshaws for men, cycles for female students. They had access to drinking water and electricity but the supply of both were unreliable.
- **Financial capital** includes bank accounts for men with weekly wages, women earning from forest products and receiving Direct Benefit Transfers (DBT), and savings at home or through SHGs.

RQ3: What are the current coping strategies the PVTGs undertake to mitigate their climate risks?

- **Water conservation:** The tribe has limited access to water, and stores it in containers at home and minimizes its use for household chores.
- **Subsistence farming:** They can not afford chemical fertilizer and machinery so rely on organic fertilizers and manual labor.
- **Use of water filters:** The tribe members filter drinking water to remove dirt and bacteria.
- **Heat protection:** They stay indoors during very hot days and only go out during the mornings or evenings.
- **Outdoor precautions:** They carry water bottles and umbrellas when they go out.

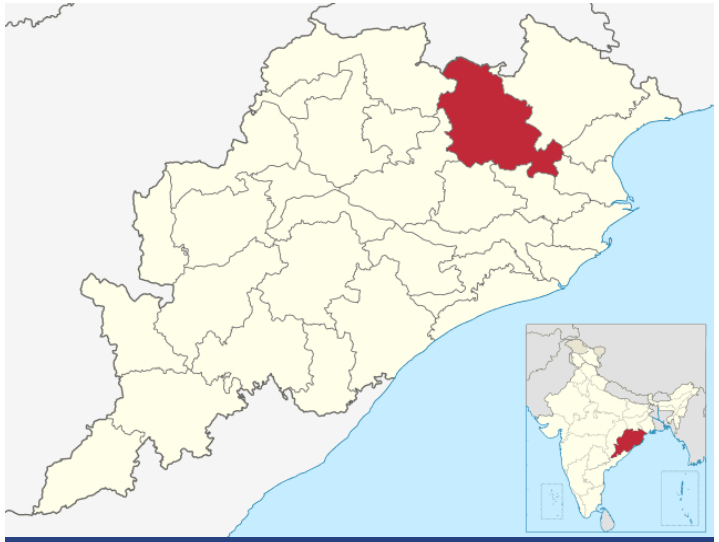
Summary of findings from the Juang tribe in Odisha (3/3)

RQ4: Can the development of a community adaptation plan help the PVTGs identify critical adaptation strategies?

- **Infrastructure Improvements:** Members of the Juang tribe we worked with sought local government support for infrastructure, including check dams in forest catchments to improve water availability, restoration of community ponds and hand pumps, stable electricity, and upgraded pucca roads with drainage before the monsoon.
- **Skill Development:** The members of the tribe advocated for greater financial literacy and skill training for youth, particularly to enable income during the monsoon months, with from the Tribal Development Agency, Odisha Livelihood Mission, and Mission Shakti.
- **Government Support:** The tribe members suggested improvements in access to existing government schemes such as the PM PVTG Development Mission and Odisha PVTG Empowerment & Livelihood Improvement Programme, to help them deal with weather extremes and greater unpredictability.
- **Community Funds:** The tribe argued for improved access to funds for reducing climate vulnerabilities at the community level, with the BDO and Panchayat Sarpanch playing pivotal roles in implementation and adaptation evaluation.

A socioeconomic profile of the Juang tribe

- The Juang people from Odisha are known for their rich cultural heritage and simple lifestyle.
- The tribe is divided into two main groups: Hill Juangs and plain Juangs, each with unique cultural practices. They engage in traditional agriculture. The hill Juangs practice shifting cultivation, while the plain Juangs have adopted settled farming.
- The Juangs are skilled in basket weaving and making decorative combs and tobacco cases, which serve both practical purposes and as sources of income. Their cultural expressions include various festivals and dances, vital for social life and community bonding.
- They gather items from the forest to barter or sell in local markets and domesticate fowl, pigs, goats, and cows to supplement their income. Despite these efforts, they struggle for survival and need to rely on shifting cultivation and food gathering.
- Limited wetland availability for paddy cultivation, economic exploitation by moneylenders, and debt from social functions and ceremonies add to their challenges. The government's efforts to empower them with sustainable economic opportunities have yet to achieve significant results. Poor sanitation and contaminated water sources due to human and animal use further worsen their living conditions.



Map: Keonjhar district, Odisha

Photo: MSC research team, April 2024

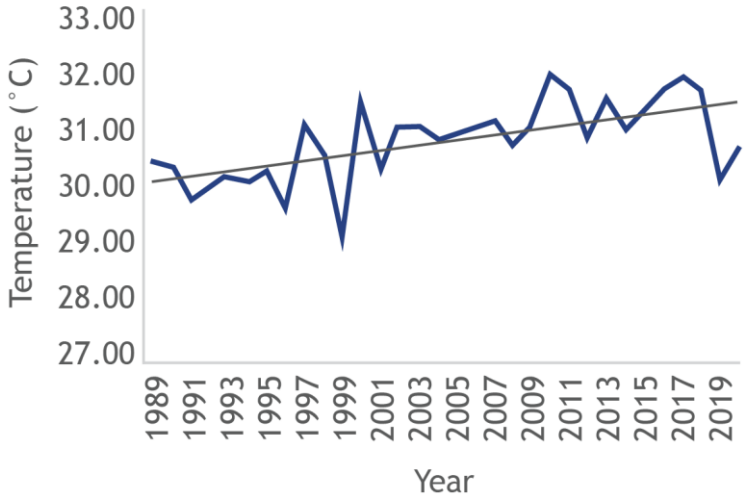
Multiple studies confirm that Keonjhar faces high variability in rainfall and temperature, along with an increasing frequency of extreme weather events

Climate overview of the district

Keonjhar district receives an average annual rainfall of 1910.1 mm. 80% of the precipitation occurs from June to September. The district faces frequent heatwaves during the summer season. The maximum temperature during this period goes well above 40°C.

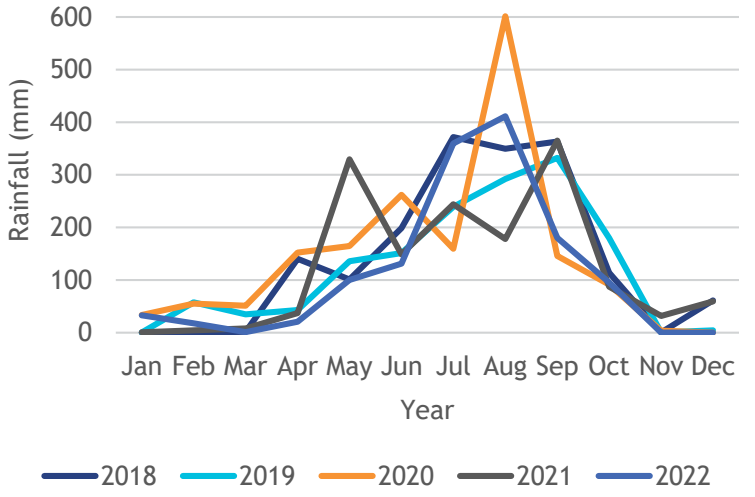
Rainfall in the district is erratic and often results in heavy downpours over a short period, which lead to flash floods in hilly areas. Extended dry spells are common, even during peak rainy seasons, and contribute to drought and crop failures. Occasionally, unseasonal rains after the monsoon retreats damage crops before harvest.

The trend of average annual maximum temperature in Keonjhar



The average annual maximum temperature has significantly increased in the district, alongside the annual average of relative humidity.

Rainfall variability in Keonjhar over the past years



Over the years, the district has experienced varied rainfall patterns. The monsoon rainfall has been exceptionally heavy in some years, while in others, rainfall occurred during the non-monsoon months.

Insights on climate vulnerability in Odisha and ongoing interventions

Climate vulnerability

- Odisha is highly vulnerable to climate change due to its geographical and climatic conditions, which expose it to frequent natural disasters, such as cyclones, floods, droughts, and heat waves. The state has experienced a significant increase in the frequency and intensity of cyclones and storm surges, particularly along its coastal districts, such as Balasore, Ganjam, Kendrapara, and Puri, which have seen such events thrice between 1970 and 2019.
- Additionally, extreme flood events have risen nearly sevenfold, which have affected millions annually. At the same time, the occurrence of droughts has increased fourfold in the past decade and impacted regions, such as Angul, Gajapati, Kandhamal, and Sundergarh.

Government-led interventions

- **PM PVTG Development Mission:** This mission, with a budget of INR 150 billion, intends to provide PVTG families with basic facilities, such as housing, water, sanitation, education, health, and sustainable livelihoods, over three years.
- **Conservation cum Development (CCD) Plan:** This initiative provides 100% financial assistance for the development of PVTGs, with a focus on education, housing, land development, and conservation of culture.
- ***Eklavya* Model Residential Schools (EMRS):** This initiative offers quality education to Scheduled Tribe (ST) students and reserves 5% of seats for PVTG students.
- **Scheme of Development of PVTGs:** This initiative offers flexible funding for socioeconomic initiatives, such as housing, land development, agriculture, and energy for PVTGs.

CSO-led interventions

- **Odisha PVTG Empowerment and Livelihoods Improvement Programme (OPELIP):** This IFAD-funded initiative was launched to reduce rural poverty and improve nutrition security among PVTGs. It focuses on community empowerment, food and nutrition security, and improved agricultural productivity.
- ***Agragamee*:** This NGO focuses on education, sustainable livelihoods, and community empowerment among PVTGs, particularly in Koraput, Kalahandi, and Rayagada districts.
- ***Gram Vikas*:** This organization is renowned for its work in water and sanitation. It also engages in holistic development efforts for PVTGs across Odisha.
- ***Vasundhara*:** This organization works on natural resource management and livelihood enhancement for tribal communities.

Climate projections for the state of Odisha: Temperature and rainfall changes (2021-2050)

Temperature projections

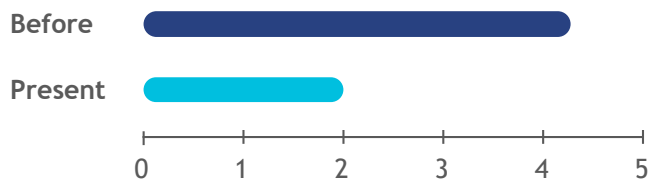
1°C to 1.5°C	Per RCP 4.5, maximum summer temperatures are projected to increase by 1.0°C to 1.5°C and minimum winter temperatures by 1.0°C to 1.5°C between 2021 and 2050.
1°C to 2°C	RCP 8.5 projects a rise in summer maximum temperatures by 1.0°C to 2.0°C and winter minimum temperatures by 1.0°C to 2.0°C in the same period.
2x	The number of severe heatwaves, that is, a temperature deviation of more than 6.4°C from normal, is expected to nearly double by the 2030s under both scenarios.

Rainfall projections

46%	Per RCP 4.5, rainfall projections indicate a potential increase in the Kharif season rainfall by up to 46%, with more high-intensity and very high-intensity rainfall events.
36%	RCP 8.5 projects an increase in the Kharif season rainfall from 6% to 36%, with similar increases in high-intensity rainfall events.
-1x	Rainfall-deficient years during the Kharif season are projected to decline from nine to 17 years historically to seven to 14 years under RCP 4.5 and to seven to 13 years under RCP 8.5 between 2021 and 2050.

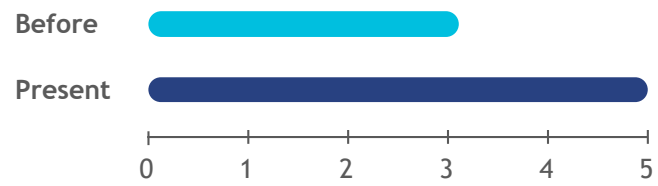
The members of the Juang tribe in Keonjhar perceive extreme heat and erratic rainfall to negatively impact their lives and livelihoods

Rainfall ⬇



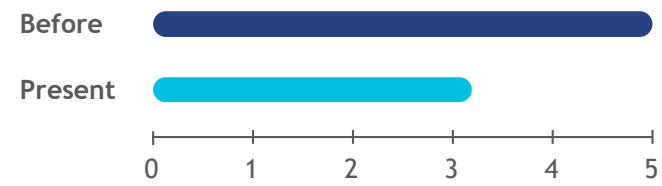
Members of the Juang tribe reported that though rainfall occurs in June and July, the amount of rainfall has reduced in these months.

Heat ⬆



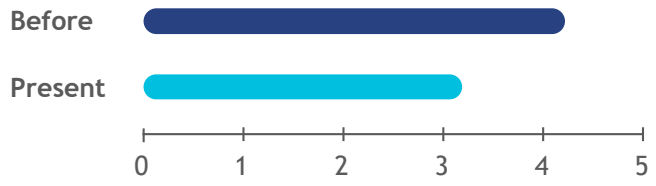
They reported that March, April, May, and June, are hot months, but the intensity of heat has increased significantly compared to the past.

Cold ⬇



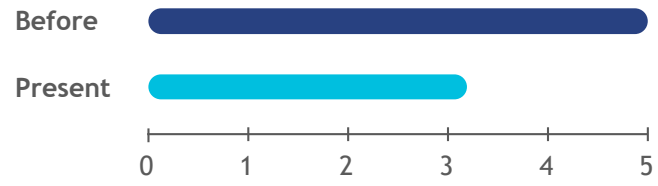
Earlier, Juang tribe members experienced mild cold weather in November and December and severe cold in January and February. Now, they reported that both the duration and the intensity of the cold have reduced.

Agricultural yield ⬇



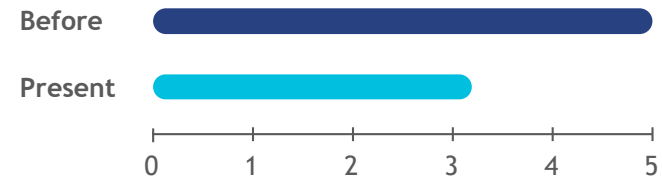
Earlier, the Juang tribe would cultivate crops in July, August, September, and October. Now, cultivation is limited to July and August, with reduced productivity.

*Mahua** ⬇



The months of production and collection of *mahua*, March and April, have remained consistent over the years. Yet, the overall quantity produced has declined.

*Kendu** ⬇



The production and collection of *Kendu* consistently occur in April and May each year; however, the total quantity produced has decreased over time.

**Mahua* (*Madhuca longifolia*) and *Kendu* (*Diospyros melanoxylon*) are forest products found in Odisha. The tribe stated that the quantity of these products available in forests has reduced.*

A reduction in monsoon rainfall in Keonjhar over the years has resulted in the depletion of natural water reserves

Direct impact	Indirect impact	Indirect impact	Indirect impact	Indirect impact
Water for cultivation reduces	Soil dries up	Yield from paddy production reduces	People earn less from the sale of paddy	
Water for household use reduces	Women have to travel long distances for clean water	Women have less time for household chores	People have to spend more on medical bills	They have less time for wage labor → Their income reduces
	Water in tube wells and borewells becomes muddy	Skin infections, kidney problems, and stomach issues occur	They incur loss of time due to medical visits	
Forest produce reduces	The quantity of *kendu* leaves, *mahua* fruits, and bamboo baskets available for sale reduces	People earn less from the sale of forest products		

"We already face water shortages throughout the year. Low rainfall only makes the situation worse."

- **Meena Juang, 34**

The high temperatures in Keonjhar have reduced the working hours by around 50% for the farming community

Direct impact	Indirect impact	Indirect impact	Indirect impact
People suffer from weakness and poor health due to dehydration	People have to spend more on medical bills	People have less time for household chores	Their income reduces
	They have to spend a long time to travel to the doctor	They have less time for wage labor	
Grass dries up	Fodder available for cattle reduces	Diseases in cattle increase	Veterinary bills increase
		Milk production reduces	Income from the sale of milk reduces
People's working hours and ability to pursue farming reduce	People's income reduces	They have less money to procure food	They suffer from weakness and poor health

We mapped the resources available to the Juang tribe that can help build their capacity to respond to various climate risks (1/2)

Human capital

Education:

- Over 50% of the respondents have attained education up to the 12th grade, whereas older generations exhibit lower levels of educational attainment.

Skills:

- Men are skilled in marble fitting, farming, wood cutting, and tribal songs.
- Women are skilled in carpet weaving and broom-making.

Labor:

- Men work eight hours a day and six days a week.
- Women work eight hours a day and 10-15 days a month.

Social capital

Groups:

- Men form groups based on age to provide mutual support.
- Women participate in self-help groups (SHGs) and save INR 20 to 100 per month.

Physical and financial support:

- The community resorts to mutual physical and financial support during emergencies.

Natural capital

Forests:

- Men collect firewood, fruits, bamboo, and mushrooms.
- Women collect *tendu* (persimmon) fruits and leaves, *sal* (*Shorea robusta*) leaves, and *mahua* (*Madhuca longifolia*).
- **Kitchen garden:** Households cultivate homestead gardens with potatoes, onions, chilies, tomatoes, and sugarcane for consumption.
- **Livestock:** Households rear cows, goats, and hens for personal consumption and occasional sale.

Photo: MSC research team, April 2024

We mapped the resources available to the Juang tribe that can help build their capacity to respond to various climate risks (2/2)

Physical capital

- **Infrastructure:** The village has a mix of government-built *pucca* houses and traditional *kutcha* houses made of straw or clay tiles.
- **WASH:** Government-built toilets are available but are rarely used. Respondents prefer jungles or fields. The water supply at home is inconsistent.
- **Transport:** Both groups own bicycles; men also take auto-rickshaws, while women note government-provided cycles for female students.
- **Electricity:** The power supply in the area is inconsistent.

Financial capital

Bank account:

- Men have bank accounts and receive weekly labor wages.
- Women earn money through the sale of *kendu* and *sal* leaves. They also receive DBT from programs, such as *Mamata*, which provides INR 10,000 per childbirth.

Savings:

- Men save at home for emergencies.
- Women save through SHGs.

Photo source: MSC research team, April 2024

The Juang tribe adopts many coping strategies to mitigate their climate risks, but the strategies are inadequate to alleviate their vulnerability

	Risks	Existing coping strategies
Low rainfall 	• Less water for household use • Financial losses from low crop production • Less water in borewells and tube wells, which makes the water muddy and causes health issues	• The tribe conserves water by storing it in containers and minimizing its use for household chores • The tribe uses cow dung instead of fertilizers and works on their own instead of using tractors to reduce expenses • The tribe filters water before consumption to remove dirt and bacteria
Extreme heat 	• Increased perspiration, which leads to dehydration and diseases	• The tribe stays indoors to avoid the negative impact of the heat • The tribe carries water bottles and umbrellas when they go out

Members of the Juang tribe exhibit a major reliance on local government bodies to drive their adaptation strategies

Adaptation option	Availability	Accessibility	Affordability	Total	Stakeholders involved	Cost	Timeline
Improved access to government programs such as PM PVTG Development Mission, Odisha PVTG Empowerment & Livelihoods Improvement Programme	1	1	1	3	*Panchayat Sarpanch*	INR 400 to 700 (Labor card + *Aadhaar* card)	Immediately
Training on financial literacy and skill development for young people, and work provision in the monsoon for income	1	1	1	3	FL-CRP, Tribal Development Agency, OLM- Mission Shakti	Unknown	In the next few months
Construction of check dams on streams to improve watershed and water availability	1	1	1	3	MGNREGA contractor	Unknown	By the next year
Replenishment of water sources, such as ponds and hand pumps	1	1	1	3	Block Development Officer (BDO), *Panchayat Sarpanch*	INR 40,00 to 50,000	Immediately
Increased advocacy with officials for stable electricity supply	1	1	1	3	Tata Power Central Odisha Division Limited (TPCODL)	Unknown	Immediately
Increase advocacy with officials to ensure responsiveness to their needs, particularly around access to government schemes that can help reduce climate vulnerabilities	1	1	1	3	Block Development Officer (BDO), *Panchayat Sarpanch*	Unknown	Immediately
Construction of *Pucca* road and improved drainage to deal with high intensity rainfall	2	3	1	6	*Panchayat Sarpanch*	Unknown	Before monsoon

We asked the respondents to evaluate their adaptation options on three parameters: Availability, accessibility, and affordability, and rate them on a scale of 1 to 5. 1 indicates a significant challenge for the community as the option is not available, accessible, or affordable, while 5 signifies that the option is readily available, easily accessible, or highly affordable.

Note: 1. A lower total score implies higher priority for an adaptation option.
2. Cost and timeline reflect the community's perception of an adaptation option's cost and desired implementation timeframe. Where the duration was known, they provided specific timeframes; otherwise, they indicated their preferred timeline.

Score above 3 out of 5 | Score of 3 out of 5 | Score below 3 out of 5

2. Detailed Insights from the Korwa tribe in Latehar district, Jharkhand

Summary of findings from the Korwa tribe in Jharkhand (1/3)

RQ1: What are the direct and indirect impacts of climate change on the lives and livelihoods of PVTGs?

Direct impacts:

- **Depletion of forest resources:** The availability of fruits, vegetables and medicinal plants have reduced due to extreme heat and erratic rainfall.
- **Health issues**: Extreme heat has caused health issues for the Korwa tribe, such as skin diseases, nausea, and nose bleeds. Untimely heavy rainfall has resulted in illnesses such as high fever, cold, cough, and malaria.
- **Less water for livestock, and crops**: Erratic rainfall patterns disrupt crop cultivation- since most of the agriculture they practice is rain-fed. Livestock health is also impacted by low water levels and increasing disease prevalence.
- **Damage to infrastructure:** Prolonged heavy rainfall causes muddy roads and damage to *kuccha* houses in particular.

Indirect impacts:

- **Increased expenditure on food and medicines:** The decline in forest production has two major consequences. First, the reduced production of fruits, vegetables, and medicinal plants forces people to purchase these items from the market, increasing their food expenditure. Second, the reduced availability of medicinal plants (*jadi-buti*) affects the treatment of illnesses, leading to increased expenditure on medicines.
- **Reduced income from sale of livestock and agricultural produce:** Reduced water leads to health issues among the animals, causing decreased milk production and reduced efficiency of bulls for tilling. This in turn affects the tribe's earnings from milk sales and they have to engage more in manual labor. The reduction in water for cultivation causes standing crops to droop down, which subsequently leads to decreased crop yield and quality. This directly impacts the revenue generated from sales, creating financial strain on the community.
- **Restricted mobility and reduced income from daily wage labor**: Heavy rainfall disrupts movement due to muddy roads, preventing the tribe from going to work. Mud houses begin to deteriorate, making it difficult to stay indoors. Additionally, roof leakages lead to post-harvest losses of stored crops, resulting in reduced income.

Summary of findings from the Korwa tribe in Jharkhand (2/3)

RQ2: What livelihood capitals are available to the PVTGs to help them respond to climate change risks?

- **Human capital:** Education levels among the Korwa tribe participants remain low, with men mostly illiterate and women educated up to 8th grade. Men are skilled in making agricultural tools, while women specialize in cooking, mat weaving, and crafting utensils. Men engage in daily wage work and mining at the nearby bauxite mine, while women work in seasonal agriculture and migrate to other parts of the state to work in brick kilns.
- **Social capital:** Men make most household decisions, often in peer groups. Women were previously involved in an SHGs but it is not active anymore. Better-off tribe members sometimes lend to each other interest-free.
- **Natural capital:** The Korwa tribe is dependent on forests for firewood, sal leaves, wood, and food. Many maintain kitchen gardens, that provide vegetables and fruits. Some have livestock such as cows and goats, serve both economic and cultural roles. They also raise pigs.
- **Physical capital:** 70% of homes in the hamlet is *kuccha*, 20% are government-constructed homes, and only 10% are *pucca* houses. Transportation includes bicycles, motorbikes, autos, and buses. Less than 20% of homes of the participants have a toilet and water availability is limited. The village lacks access to electricity.
- **Financial capital:** Less than 50% of participating men had and used bank accounts. Home savings were common, though limited. Most of the elderly received cash from the government, and some households received remittances from family members working in cities. Over 50% of men prefer bank loans over personal networks.

RQ3: What are the current coping strategies the PVTGs undertake to mitigate their climate risks?

- **Heat protection:** Members of the Korwa tribe stay indoors to avoid extreme heat during the summer.
- **Traditional cooling methods:** The tribe increases the consumption of *aam panna*, black gram leaves, and palash flowers soaked in water during the summer.
- **Livestock care:** They store water in containers, purchase fodder for livestock during the summer, and use medicinal plants for animal's medical treatment.
- **Postharvest crop protection:** The tribe covers the crops postharvest with large plastic sheets to protect them from getting ruined.
- **Medical preparedness:** They keep emergency medicines at home to treat themselves when needed.

Summary of findings from the Korwa tribe in Jharkhand (3/3)

RQ4: Can the development of a community adaptation plan help the PVTGs identify critical adaptation strategies?

- **Infrastructure improvements:** The Korwa tribe emphasized the construction of pucca roads to improve mobility during storms, a stable electricity supply, and pucca houses that can withstand heavy rainfall, with support from ward members and/or *mukhiya*.
- **Skill development:** Members of the tribe sought improved access to training for skill development to enable greater opportunities for income, ideally delivered in four-hour sessions.
- **Agricultural enhancement:** The tribe wanted access to improved irrigation and greater quality of agricultural extension support to improve their yields, which are being impacted by unpredictable rainfall and high heat.
- **Essential services:** The tribe members stressed on the need to construct adequate health facilities to enable them to deal with weather-related illnesses and improved drinking water facilities.

Culture, livelihoods, and socioeconomic profile of the Korwa tribe

- The Korwas are divided into subgroups, such as *Agaria*, *Dandh*, *Dil*, and *Pahadi* Korwas, each with unique cultural practices. Both men and women get tattooed in places where ornaments are worn—on the wrists, neck, legs, and ankles.
- The Korwa people primarily engage in subsistence agriculture. They practice *jhoonga kheti*, which involves trimming forest areas to grow crops like lentils. Some Korwas have transitioned to settled agriculture, supported by government initiatives that provide agricultural aid and infrastructure. The Korwas create bamboo products, such as *supas* (rice cleaners), to supplement their income.
- They live in hilly, forested areas, often in mud huts with thatched roofs. They rely heavily on forest resources for their livelihood. They also collect minor forest produce, such as fruits, nuts, and medicinal plants. They also eat mahua, *kanda*, *sihar*, and *burju* fruits when they are in season.
- The Korwas are economically disadvantaged, with limited access to food and basic amenities. Their diet primarily consists of rice and seasonal fruits and animals from the forest.

Map: Latehar district, Jharkhand

Photo: MSC research team, June 2024

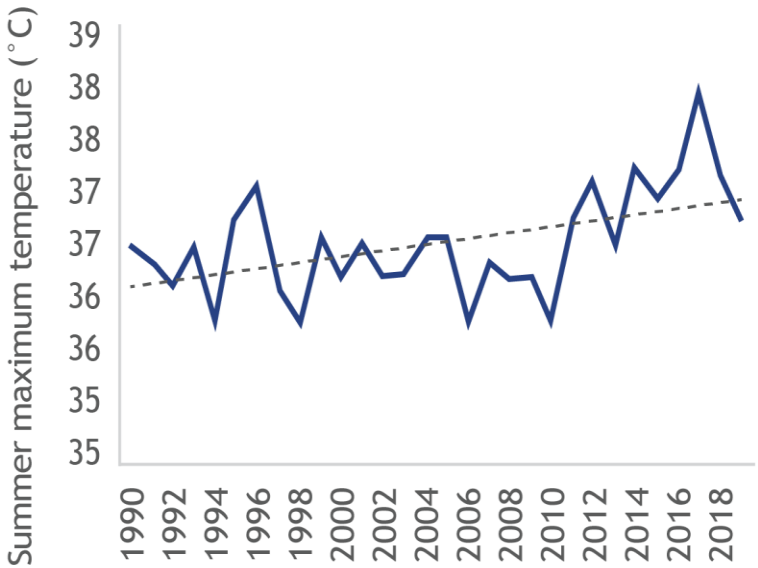
Latehar district faces agricultural droughts due to high temperatures and low rainfall during the monsoon months

Climate overview of the district

The temperature in Latehar varies significantly throughout the year. Latehar has been experiencing frequent droughts and erratic rainfall patterns. Maximum temperatures have been rising, which has contributed to more frequent and intense heatwaves.

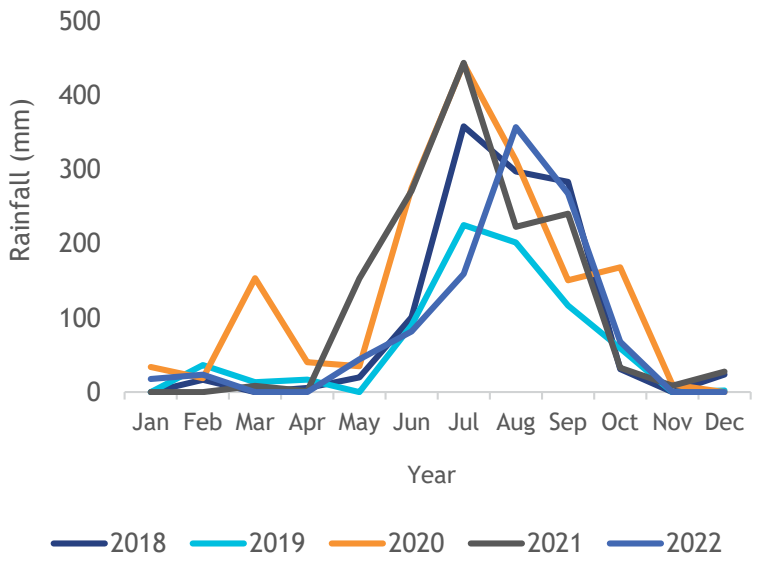
The region has faced rainfall deficits—Jharkhand experienced a 37% rainfall deficit in recent times. Long dry spells and unpredictable rains have become more common and have disrupted traditional agricultural practices.

Trend of mean summer maximum temperatures in Jharkhand



The period after 2010 shows a more pronounced increase in maximum temperatures. Several years recorded temperatures close to 37.5°C or above it.

Rainfall variability in Latehar over the past years



In recent years, rainfall has increased during the post-monsoon months in Latehar, which negatively impacts the standing crops and reduces the overall yield.

Insights on climate vulnerability in Jharkhand and ongoing interventions

Climate vulnerability

- A substantial 69.98% of Jharkhand's area is affected by desertification and land degradation—the highest percentage in the country.
- Several factors contribute to Jharkhand's vulnerability to climate change, such as an undulating terrain and shallow soils with low water-holding capacity and poor soil fertility, and the prevalence of rainfed agriculture, which depends heavily on erratic rainfall patterns.
- Latehar is among Jharkhand's highly vulnerable districts in terms of agricultural productivity. It has a vulnerability score of -0.43. Latehar experienced significant environmental degradation from 2013 to 2023, with 85% of tree cover loss within natural forests.

Government-led interventions

- **PM PVTG Development Mission:** It provides essential amenities, such as housing, clean water, sanitation, healthcare, and sustainable livelihoods to PVTG families.
- **Eklavya Model Residential Schools (EMRS):** This program was implemented by the Ministry of Tribal Affairs. It provides quality education to students who belong to Scheduled Tribes (ST). These also include PVTG students from classes 6th to 12th.
- **Jharkhand Tribal Empowerment and Livelihoods Project (JTELP):** This project seeks to improve living conditions and empower tribal households, which include PVTGs, through sustainable livelihood opportunities.
- ***Pradhan Mantri Van Dhan Yojana* (PMVDY):** This program enhances tribal livelihoods through the development of value chains for forest-based products and skill training.

CSO-led interventions

- **PRAVAH:** It focuses on sustainable livelihoods for PVTGs in Jharkhand through training sessions in SHG management and climate-resilient practices to support economic inclusion.
- **SAMVAD:** It promotes grassroots democracy, agroecology, gender equality, and preventive health in Jharkhand.
- **Bharat Rural Livelihoods Foundation (BRLF):** It implements an EU-funded project to improve PVTG and Dalit livelihoods through water and clean energy initiatives.
- **Badlao Foundation:** It seeks to strengthen governance over natural resources for climate justice to reduce the vulnerability of forest-dependent communities.
- **Sahayogi Mahila:** It addresses health, education, and social issues to improve the socioeconomic conditions of Jharkhand's tribal communities.

Projections show that temperature and rainfall between 2021-2050 are expected to change in the state of Jharkhand

Temperature projections

1°C to 2°C	Both maximum and minimum temperatures in Latehar are projected to increase. Under RCP 4.5 and RCP 8.5 scenarios, the summer maximum and winter minimum temperatures are expected to rise by 1°C to 2°C between 2021 and 2050 compared to the historical period of 1990–2019.
3x	The number of heatwaves is expected to increase, with a departure from the normal temperature between 4.5°C and 6.4°C. Severe heatwaves would also rise under both the RCP 4.5 and RCP 8.5 scenarios, with a temperature departure greater than 6.4°C beyond normal. While heatwaves are projected to increase slightly, severe heatwaves are projected to triple under both scenarios.

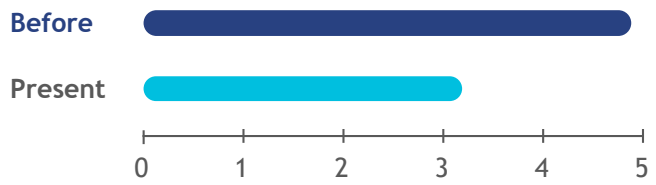
Rainfall projections

Erratic	The area's annual rainfall is projected to increase. However, the distribution of rainfall is expected to become more erratic, with more intense rainfall events during the monsoon season and prolonged dry spells during other periods.
Risk	The Kharif season may experience increased rainfall variability, while the Rabi season could see a higher risk of rainfall failure.

1x	The region will likely face more frequent and severe droughts and floods due to the combined effects of rising temperatures and erratic rainfall.

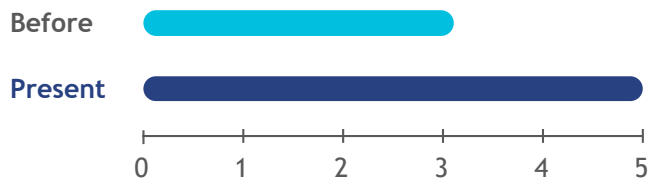
The Korwa tribe identifies erratic rainfall and rising temperatures as the most impactful manifestations of climate change in Latehar

Rainfall



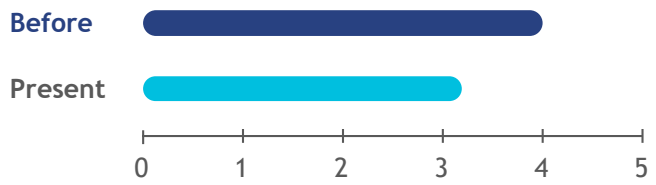
Earlier, the monsoon months were June and July. Now, rainfall has become more erratic, with mild showers in March and May.

Heat



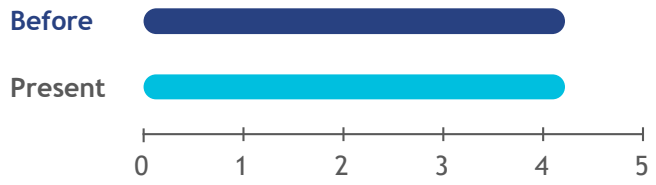
Earlier, the months that experienced the most heat were April and May. Now, the intensity of heat has increased. It starts to get hot in March, and May experiences a higher number of heat waves.

Rice



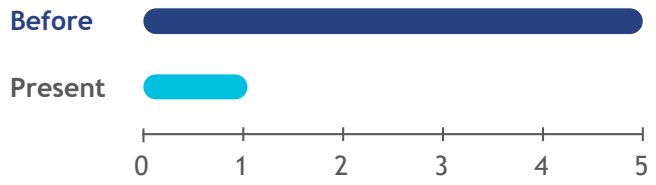
Earlier, rice was sown in May and harvested in October. Now, rice is sown at the end of June and harvested in November. The overall yield of rice has reduced.

Maize



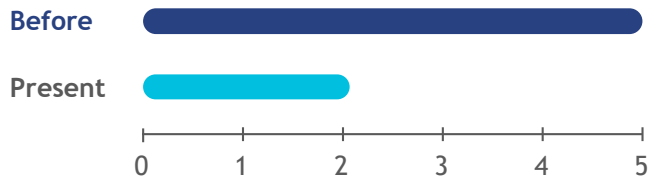
Earlier, maize was sown at the end of May and harvested in October. Now, the tribe sows maize at the beginning of July and harvests it in November, with a higher use of chemical fertilizers to maintain yields. However, this practice is unlikely to be sustainable.

*Gondli**



June and July are the months of sowing *gondli* and November is the month of harvesting. This trend has remained consistent over the years, but the overall yield of *gondli* has reduced.

*Sal***



April to December have been the months of availability of *sal* in forests. This trend has remained consistent over the years, but the overall quantity of *sal* leaves in forests has reduced.

**Gondli* are little millets that the tribe cultivates. They keep some for self-consumption and sell the rest in December and January. However, the production of *gondli* has reduced due to low rainfall.
***Sal* (*Shorea robusta*) is a species of tree found in the forests of Jharkhand. The tribe procures *sal* leaves from forests and uses them to make utensils. However, the quantity of these leaves has reduced.

Low monsoon rainfall has reduced the quantity of forest produce in Latehar, which has resulted in the decline of alternate income sources for the Korwa tribe

Direct impact	Indirect impact	Indirect impact	Indirect impact
Water and fodder for livestock reduces	Health issues occur among the livestock	Milk production reduces	People earn less from the sale of milk
		Efficiency of bulls for tilling reduces	People have to engage more in manual labor
Water for cultivation reduces	Standing crops droop down	Crop yield and quality reduces	Revenue from sales reduces
Forest produce reduces	Production of fruits and vegetables in forests reduces	People have to purchase fruits and vegetables from the market	Expenditure on food increases
	Availability of medicinal plants (*jadi-buti*) reduces	Treatment of illnesses is affected	Expenditure on medicines increases

Prolonged exposure to extreme heat results in several diseases, lower labor, and reduced earnings for the Korwa tribe

Direct impact	Indirect impact	Indirect impact	Indirect impact
Skin diseases, nausea, and nosebleeds occur	People have to spend more on medical bills	Their savings get depleted	Their income reduces
	They have to spend a long time to travel to the doctor	Their time for wage labor reduces	
People's working hours reduce	Their income from wage labor reduces		
Ponds dry up	The availability of water for consumption by the tribe and their livestock reduces	People have to travel long distances to fetch water	They suffer from weakness and poor health

Untimely heavy rainfall in Latehar leads to postharvest losses for the Korwa tribe

Direct impact	Indirect impact	Indirect impact	Indirect impact
Heavy rainfall during the harvesting period affects standing crops	People's income from the sale of crops reduces		
Illnesses, such as fever, cold, cough, and malaria occur	People have to spend more on medical bills		
	They have to spend a long time to travel to the doctor	Time for wage labor reduces	Their income reduces
Roads become muddy	Movement gets restricted, which results in the inability to go to work	People lose income from wage labor	
Houses get damaged	Mud houses decompose	People struggle to stay indoors	
	Leakage occurs in roofs	Stored crops get damaged postharvest	Income from the sale of crops reduces

"Last year, 50 kg of my *Jatni* crop got ruined when it rained after harvest. I could have earned INR 4,000 from it."

- Gulab Kumari, 23

The resources available to the Korwa tribe vary by gender (1/2)

Human capital

Education:

- Men are mostly illiterate. Only a few attended secondary school.
- Women's highest educational qualification ranges from 5th to 8th grade. Some did not attend school.

Skills:

- Men make agricultural equipment using wood sourced from the forest.
- Women cook, weave mats, and make utensils from *sal* leaves.

Labor:

- Men perform daily wage work for 8 hours a day and contract work in mines.
- Women perform agricultural labor for 1-2 days a week for 8 hours a day from July to January and migrate with their husbands to work at brick kilns from November to June.

Social capital

Groups:

- The community has no formal groups or SHGs.
- Men come together when needed for decision-making.
- Women were enrolled in three to four SHGs that used to exist in the village. These have been inactive since their leader quit.

Financial support:

- Men lend money to each other when needed without charging interest.
- Women rely on resourceful individuals in the community for financial support.

Natural capital

Forests:

- The community relies on forests for firewood, *sal* leaves, wood for agricultural equipment, mushrooms, fruits, *saag*, and *neem* sticks for toothbrushes.

Kitchen gardens:

- The community uses kitchen gardens to grow potatoes, radishes, gourds, okras, tomatoes, brinjals, mangoes, jackfruits, and guavas.

Livestock:

- Hens, cows, bullocks, buffaloes, goats, and pigs are used for sale or on special occasions, such as weddings.

Photo: MSC research team, June 2024

The resources available to the Korwa tribe vary by gender (2/2)

Physical capital

- **Infrastructure:**
  70% of houses are *kuccha*.

  20% have government-provided houses with asbestos roofs.

  10% have *pucca* houses.
- **Transport:**
  Bicycles, motorbikes, autos, and buses are the primary means of transport. Autorickshaws charge INR 50, and buses charge INR 40 for a one-way trip to Mahuadanr (10 km away from their village).
- **WASH:**
  Less than 20% of houses have washrooms. Government-provided toilets are difficult to use.

  People travel 2 km to fetch water. Less than 50% have a water supply, and shallow borings fail during summer.
- **Electricity:**
  Both groups reported that the village has no electricity supply.

Financial capital

- **Bank accounts and savings:**
  Less than 50% of men save using their bank accounts, while everyone has savings at home.
- **Pensions:**
  All individuals aged 60 and above receive pensions.
- **Remittances:**
  Some individuals receive remittances through bank transfers, and a small segment of the population has life insurance.
- **Loans:**
  More than 50% of men prefer to approach banks for loans rather than relatives or neighbors.

Photo: MSC research team, June 2024

Different households of the Korwa tribe follow similar sets of practices to reduce the impact of climate change

	Risks	Existing coping strategies
Extreme heat 	• Skin diseases, nausea, and nose bleeds • Heatstroke and weakness • Less water for livestock to consume	• The tribe stays indoors to avoid the negative impact of the heat • The tribe increases the consumption of *aam panna*, black gram leaves, and *palash* flower soaked in water • The tribe stores water in containers, buys fodder for the livestock, and uses medicinal plants for their treatment
Severe rainfall 	• Postharvest losses • Illnesses, such as fever, cold, cough, and malaria	• The tribe covers the crops postharvest with large plastic sheets to protect them from getting ruined • The tribe keeps medicines at home to treat themselves when needed

The people of the Korwa tribe believe that access to basic amenities will help them cope with climate change better

Adaptation option	Availability	Accessibility	Affordability	Total	Stakeholders involved	Cost	Timeline
Construction of *pucca* roads to improve mobility during storms	1	4	1	6	Contractor	Unknown	Before next monsoon
Improved irrigation to enable farming during low rainfall	1	4	1	6	Supply Officer	Unknown	At least one year
Improved access to skill development trainings to enable greater opportunities for income	4	1	2	7	Block Officer in charge of training	INR 100 (commute cost from Mahuadanr)	Ideally four hours per day
Adequate health facility in the village, particularly for weather related illnesses	1	1	5	7	Unknown	Unknown	Immediately
Advocate for greater stability of electricity supply	3	3	2	8	Ward member, *Mukhiya*	Unknown	At least two months
Increased agriculture extension, with a focus on sustainable high yielding practices	1	4	4	9	Unknown	Unknown	Less than a year
Improved drinking water facility, particularly during times of high heat	3	5	1	9	Ward member, *Mukhiya*	Unknown	Immediately
Construction of *pucca* houses that do not leak during heavy rainfall	5	2	3	10	Ward member, *Mukhiya*	INR 2 to 3 lakhs	One to two months

We asked the respondents to evaluate their adaptation options on three parameters: availability, accessibility, and affordability, and rate them on a scale of 1 to 5. 1 indicates a significant challenge, that is, the option is not available, accessible, or affordable for the community, while 5 signifies that the option is readily available, easily accessible, or highly affordable.

Score above 3 out of 5 | Score of 3 out of 5 | Score below 3 out of 5

Note: A lower total score implies higher priority for an adaptation option.

3. Detailed Insights from the Sahariya tribe in Baran district, Rajasthan

Summary of findings from the Sahariya tribe in Rajasthan (1/3)

RQ1: What are the direct and indirect impacts of climate change on the lives and livelihoods of PVTGs?

Direct impacts:

- **Health issues**: The Sahariya tribe experiences health problems due to extreme heat, which include nausea, skin diseases, and fever.
- **Reduced water availability for households, livestock, and cultivation**: Extreme heat has caused water shortages, affecting household use, livestock consumption, and cultivation of crops like rice, soybean, and coriander.
- **Low forest produce**: The quantity of forest products, such as *tendu, karonda, chittod* leaves, and *jamun* reduces.

Indirect impacts:

- **Increased medical expenses:** The tribe spends considerable time traveling to doctors, reducing the time available for wage labor and lowering their income. This also results in higher medical expenses.
- **Effect of water scarcity on household, cultivation, and livestock**: Reduced water availability causes standing crops to wilt, leading to lower yield and quality. This drives up vegetable prices, creating financial stress within the tribe. Additionally, the need to buy fodder from the market adds extra costs. Long distances to water sources reduce available labor time, further decreasing income.
- **Financial strain**: The tribe is forced to purchase vegetables and fruits from the market, resulting in increased expenses.

Summary of findings from the Sahariya tribe in Rajasthan (2/3)

RQ2: What livelihood capitals are available to the PVTGs to help them respond to climate change risks?

- **Human capital:** Participating men had attended college but over 50% of women lacked even primary education. Men were skilled in agriculture, while women claimed no specific skills only focusing on household and agricultural work, and manual labor participating in MGNREGA for 10-12 days monthly.
- **Social capital:** Men lead community gatherings, while women were part of SHGs that provided support and fostered cooperation. Only a few SHGs remain active.
- **Natural capital:** High levels of deforestation has meant that the members have reduced their reliance on forest-based natural resources. Some men maintained kitchen gardens, but fewer women had to them. Livestock ownership was limited, with men owning some animals, while fewer than 20% of women owning livestock.
- **Physical capital:** Most of the participating Sahariya tribes membered lived in kutcha houses, with only a few in pucca houses. Recent improvements include pucca roads to the village. Men own bicycles and motorbikes, while women do not have much mobility. Water access is difficult, and there is no stable electricity supply.
- **Financial capital:** Women have bank accounts to receive funds from MGNREGA. Men save at home, but women struggle to save due to limited earnings. Fewer than 30% of migrating men send remittances, and loans taken by women from SHGs and moneylenders often lead to debt cycles and distress for households.

RQ3: What are the current coping strategies the PVTGs undertake to mitigate their climate risks?

- **Carrying water during travel:** The Sahariya tribe members carry drinking water, even when they travel for short distances.
- **Heat-protective clothing:** The tribe wears cotton clothes, uses a towel to cover their head, and a mat to sit on rocks.
- **Traditional cooling methods:** They increase their intake of cooling food, such as curd, buttermilk, onion, lemonade, and sugarcane juice.
- **Water collection and storage:** They use 15-liter cans to collect water and store it in tanks at home for self-consumption.

Summary of findings from the Sahariya tribe in Rajasthan (3/3)

RQ4: Can the development of a community adaptation plan help the PVTGs identify critical adaptation strategies?

- **Infrastructure Improvements:** The Sahariya tribe prioritized access to stable electricity supply as a major concern, particulary during the summer. They wanted access to adequate health facilities to address climate-related illnesses through *tehsildar* interventions. The members also sought to improve drinking water supply, particularly in summer.
- **Skill Development:** The members of the tribe focused on skill development training for women to increase income during the off-season. They also wanted improved agricultural extension support from the Department of Agriculture for greater knowledge about improved agricultural practices. The community also identified greater access to MGNREGA labor provisions during the monsoon for additional household income.
- **Government Support:** Solar panel installation at INR 15,000 per unit and construction of *pucca* houses to withstand prolonged rainfall (costing INR 250,000 to 300,000 per house) were key initiatives the members identified that the government could provide immediate support for dealing with extreme heat and unpredictable rainfall.
- **Government program access:** The participants called for improved access to government programs such as the PM PVTG Development Mission and Mukhya Mantri Jal Swavlamban Abhiyan, with implementation overseen by the *Panchayat Sarpanch* and *Sachiv*.

Culture, livelihoods, and socioeconomic profile of the Sahariya tribe:

- The Sahariyas are organized into clans, each with its own social and cultural practices. They have rich traditions in storytelling and performing arts, which include ceremonial songs, seasonal songs, and theatrical performances based on local legends and deities. The Sahariyas live in clusters of houses called *saharana*, typically located outside the main villages.
- Some Sahariyas are settled cultivators, growing crops such as wheat, pearl millet, maize, gram, and arhar. Agriculture is largely rain-dependent—only a small percentage of the land is irrigated. The main sources of irrigation are wells and seasonal rivulets.
- Many Sahariyas work as landless laborers, and some were previously bonded laborers. They also engage in mining and quarrying.
- The Sahariya tribe in Rajasthan has been historically deprived of access to resources and opportunities. This also includes the opportunity to get an education. Sahariya women face significant socioeconomic challenges, such as illiteracy and gender inequality. They are often involved in labor-intensive tasks, such as cattle grazing, fodder collection, and fetching of water, which limits their educational and economic opportunities.

Map: Baran district, Rajasthan

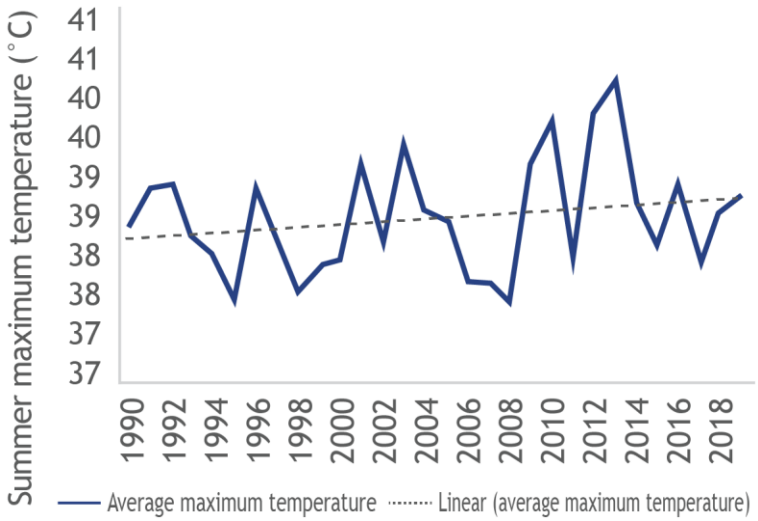
Photo: MSC research team, June 2024

Baran district is prone to extreme temperatures in the summer and winter months

Climate overview of the district

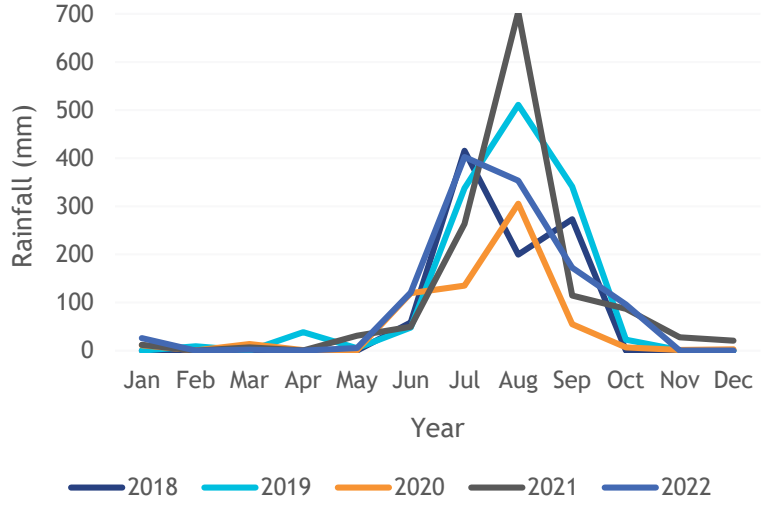
Baran is characterized by a semi-arid climate with extreme temperatures and erratic rainfall patterns. May and June are the hottest months—mean daily maximum temperatures reach around 41.8°C and mean daily minimum temperatures around 26.5°C. During heat waves, temperatures can soar to 48-50°C. About 84% of the annual rainfall occurs during the monsoon months from June to September. The district averages about 13 rainy days per year, with significant variation across different locations.

Trend of mean summer maximum temperatures in Rajasthan



The annual temperature range has been widening. Both maximum and minimum temperatures show an upward trend. Most of the villages in Baran have not received substantial rainfall for the past two consecutive years, which has led to severe drought-like conditions.

Rainfall variability in Baran over the past years



The district experiences heavy to very heavy rainfall during the monsoon months. However, this rainfall is not evenly distributed throughout the days and follows an erratic pattern.

Insights on climate vulnerability in Rajasthan and ongoing interventions

Climate vulnerability

- Rajasthan is located in a region with high climate sensitivity, significant vulnerability, and low adaptive capacity. The state faces severe water scarcity with uneven distribution, both temporally and spatially, and is most likely to experience drought in India.
- Rajasthan's vulnerability is driven by acute water scarcity due to erratic rainfall, overexploited groundwater, and socioeconomic challenges, such as limited natural resource management, low road density, low per capita income, and low female literacy. Moreover, inadequate health infrastructure, low female workforce participation, dependency on rainfed agriculture, prevalence of diseases, and land degradation further exacerbate the state's vulnerability.

Government-led interventions

- ***Antyodaya Anna Yojana*:** This program provides highly subsidized food grains to the India's poorest families. It offers 35 kg of rice or wheat per month at minimal cost.
- ***PM Janjati Adivasi Nyaya Maha Abhiyan* (PM-JANMAN):** This mission seeks to improve socioeconomic conditions through the construction of homes and roads and the provision of water and sanitation facilities to PVTG villages.
- **Employment training program:** *Rajeevika* Skills is part of the National Rural Livelihood Mission (NRLM). It seeks to skill poor rural youth for employment or self-employment at or above minimum wages. It collaborates with organizations, such as RSLDC, CIPET, and RSETIs, to train more than 100,000 rural youth in the next three years. Under this program, the Sahariyas are trained for self-employment through training in various fields, such as weaving, furniture making, and bicycle repair, among others.

CSO-led interventions

- ***Sankalp:*** *Sankalp* is a community and tribal rights-centric not-for-profit organization. *Sankalp* primarily works with the Sahariya tribe in Shahabad and Kishanganj block of Baran district, Rajasthan. *Sankalp*'s grassroots programs seek to enhance education, income, and health awareness for the Sahariya community, enrich their livelihoods, and ensure financial and social sustainability.
- **Foundation for Education and Development - *Doosra Dashak*:** *Doosra Dashak* seeks to provide relevant, holistic education to people in the 11 to 20 age group who were deprived of formal education.

Climate projections for Rajasthan: Temperature and rainfall changes (2021-2050)

Temperature projections

1°C	Per RCP 4.5, the maximum summer temperature is projected to increase by 1.5°C, and the minimum winter temperature is also expected to increase by up to 1.5°C.
1.5°C to 2°C	Per RCP 8.5, the maximum summer temperature could increase by up to 2°C, and the minimum winter temperature is projected to increase by up to 1.5°C.
2x	The frequency and intensity of heatwaves are expected to increase **under both RCPs**, and temperature can reach up to 45°C in some areas during peak summer months.

Rainfall projections

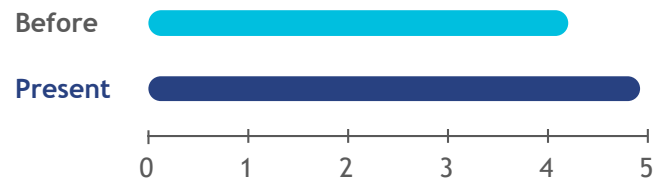
-1x	RCP 4.5 predicts an increase in annual rainfall in most districts. However, monsoon rainfall is projected to decrease.
10%	RCP 8.5 projects an increase in annual rainfall in all districts. Some districts can experience more than a 10% increase. Rainfall variability is also expected to increase in districts, such as Jaisalmer, Baran, and others.
1x	Both RCP 4.5 and RCP 8.5 scenarios predict an increase in the frequency and intensity of high-intensity rainfall events across all districts.

The Sahariya tribe considers low seasonal rainfall responsible for the delay in the sowing and harvesting cycles of major crops in Baran

Rainfall

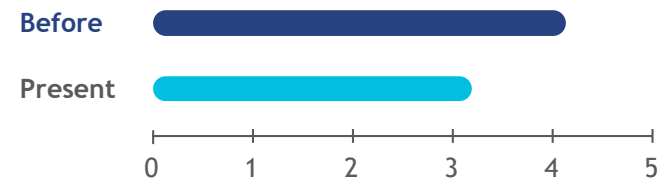
Earlier, the monsoon months were July, August, September, and October. Now, rainfall has become more erratic and occurs in intervals of 15 days in July and August seasonally.

Heat



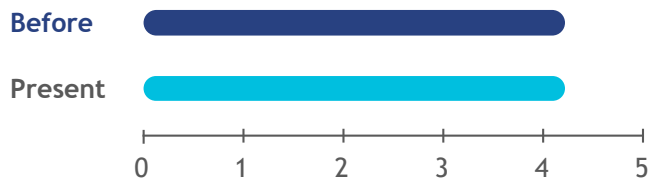
Earlier, the heat months were March, April, and May. Now, the intensity of heat has increased, and high temperatures prevail in March, April, May, and June.

Cold



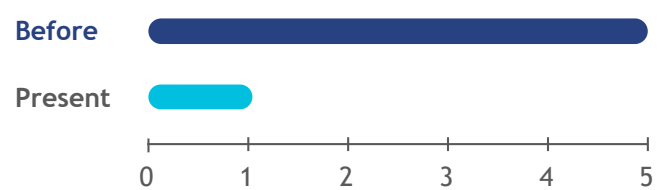
Earlier, the winter months were November, December, January, and February. Now, the duration and intensity of the cold have reduced.

Forest products



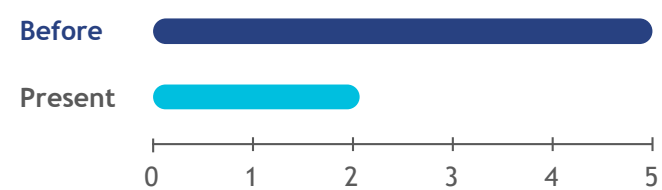
Earlier, the Sahariya tribe majorly depended on medicinal plants acquired from forests. Now, forests have been cut down, which has reduced the tribe's dependence on forest products.

Soybean, black lentils, sesame, maize, and rice



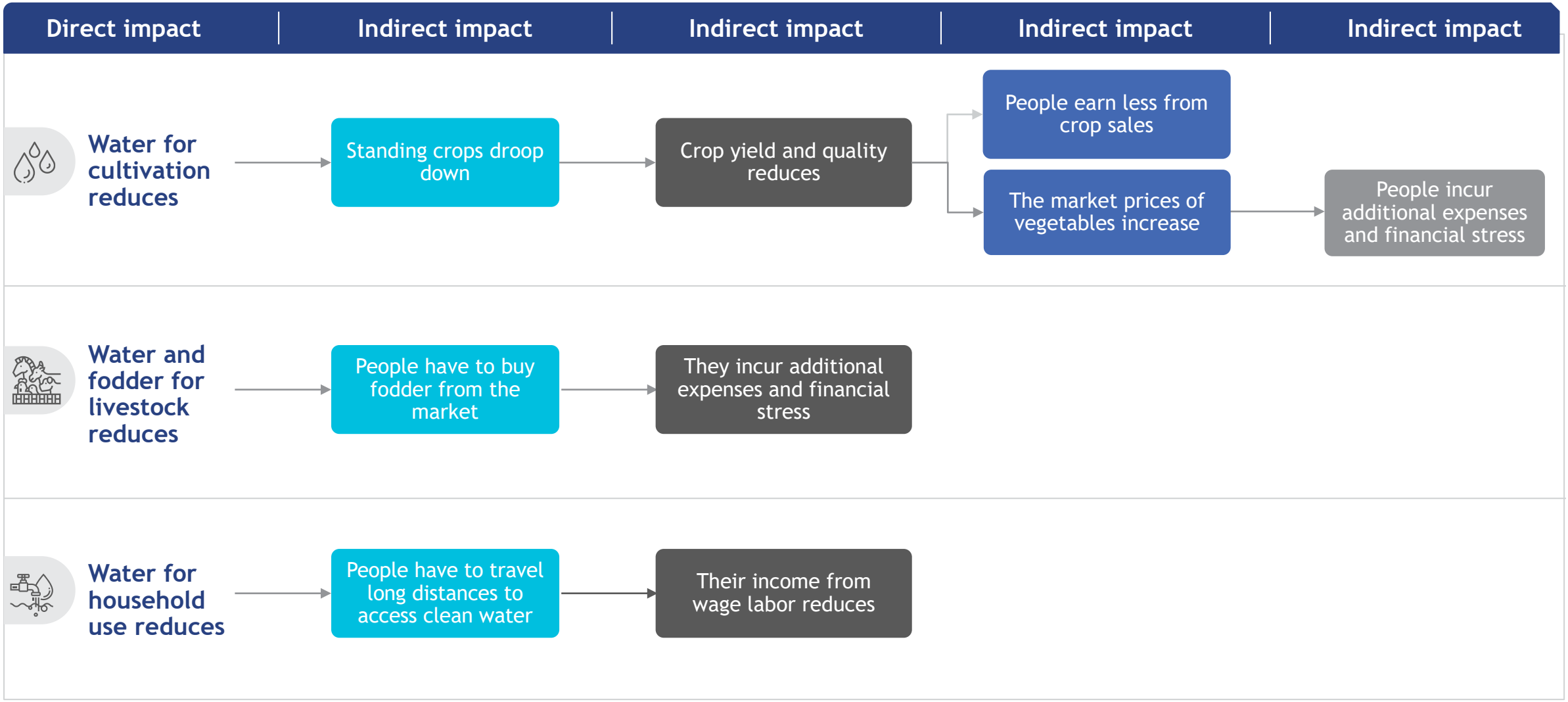
Soybean, black lentils, sesame, maize, and rice were all earlier sown in June and are now sown in July. Along with the delay in their sowing cycle, the yield of these crops has reduced over time.

Wheat, mustard, and black chickpeas



November is the month of sowing for wheat, mustard, and black chickpeas. This has remained consistent over the years, but the overall quantity of these crops has reduced.

Extended dry spells in Baran reduce the fodder available for consumption by livestock



High temperature in Baran affects agricultural yields, which lowers the Sahariya tribe's income from agricultural labor

Direct impact	Indirect impact	Indirect impact	Indirect impact
Quantity of forest products, such as *tendu*, *karonda*, *chittod* leaves, and *jamun* reduces	People have to buy fruits and vegetables from the market	People have to spend more on food	
Skin diseases, fever, and nausea occur	People have to spend more on medical bills	People incur additional expenses and financial stress	
	They have to spend a long time to visit the doctor and get treatment	They have less time for wage labor	Their income reduces
Fodder, water, and shade for livestock reduce	Diseases among livestock increase	Livestock mortality increases	
Cultivation of rice, soybean, coriander, and wheat reduces	The quantity of crops available for self-consumption and sale gets affected	People's income from sale of the harvested crop reduces	

We assessed the Sahariya tribe's livelihood capitals that can help boost their resilience against climate risks (1/2)

Human capital

Education:

- The current generation of men goes to college.
- More than 50% of women have not completed primary education.

Skills:

- Men are skilled in agriculture and daily wage labor.
- Women are skilled in cooking and agricultural labor.

Labor:

- Men work contractually for long hours without leave.
- Women participate in MGNREGA work for 10 to 12 days per month and perform tasks, such as digging soil.

Social capital

Groups:

- Community gathering fosters social capital. Men often lead these gatherings.
- Women participate actively in self-help groups (SHGs), but some groups are inactive.
- These social structures provide support and a sense of belonging, which helps strengthen community ties and facilitate cooperation.

Natural capital

Forests:

- Both groups collect firewood from forests, but their dependence has reduced over the years due to significant deforestation.
- *Tendu* leaves, *jamun*, and *chittod* leaves are no longer available in the forests.

Kitchen garden:

- Men grow neem, Indian blackberry, mango, *babool*, spinach, fenugreek, okra, brinjal, potato, gourd, and garlic in their kitchen gardens.
- Less than 20% of women own kitchen gardens.

Livestock:

- A few men own cows, buffaloes, goats, and hens, while less than 20% of women own livestock.

Photo: MSC photo database

We assessed the Sahariya tribe's livelihood capitals that can help boost their resilience against climate risks (2/2)

Physical capital

Infrastructure:

- More than 50% of men and all women own *kutcha* houses.
- The village has a limited number of *pucca* houses constructed under the PM *Awas Yojana*.
- *Pucca* roads were built in the village a year ago.

Transport:

- Men own motorbikes and bicycles.
- Women lack a mode of transport at home.

WASH:

- Men travel 1 to 1.5 km to fetch water.
- Women lack water supply at home and travel to the *Panchayat Bhawan* to fetch water from the motor pumps.

Electricity:

- The community does not have a stable electricity supply.

Financial capital

Bank accounts:

- Both groups own bank accounts.
- Women opened accounts when they started to work under MGNREGA.

Savings:

- All men save at home. Women struggle to save due to limited earnings.

Remittances:

- Less than 30% of men send money home through banks, PhonePe, or eMitra when they migrate for work.
- 90% of women do not receive any remittances.

Loans:

- Men use loans taken by their wives from SHGs and moneylenders.
- Repayment often involves labor and cycles of debt and dependency.

> "Our place of work does not have drinking water or shelter, which makes it even more difficult for us to step out in the heat."
>
> **- Bhanwarlal Sahariya, 45**

The Sahariya tribe has a set of household remedies as coping strategies

	Risks	Existing coping strategies
Extreme heat 	Body pain, fever, and nausea	The tribe carries drinking water, even when they travel for short distances The tribe wears cotton clothes, uses a towel to cover their head, and a mat to sit on rocks The tribe increases their intake of cooling food, such as curd, buttermilk, onion, lemonade, and sugarcane juice
Low rainfall 	Less water for household consumption	The tribe uses 15-liter cans to collect water and stores it in tanks at home for self-consumption

The Sahariya tribe realizes the importance of community funds and financial aid from the local government to overcome climate risks

Adaptation option	Availability	Accessibility	Affordability	Total	Stakeholders involved	Cost	Timeline
Installation of solar panels in the tribe's homes	1	1	3	5	*Vidhayak*	INR 15,000	Immediately
Access to labor provision in the monsoon for extra income	1	1	5	7	MGNREGA	INR 400	Immediately
Advocate for improving stability of electricity supply	2	4	2	8	Power Department	Unknown	Immediately
Ensure health facilities in the village can cater to weather related illnesses	2	3	3	8	*Tehsildar*	Unknown	Immediately
Improved drinking water supply to the community particularly during summer months	2	4	2	8	*Panchayat Sarpanch* and *Sachiv*	INR 400,000 to 500,000	Six months to one year
Skill development training to improve income, particularly for women	4	3	2	9	Unknown	Can pay up to INR 500 per month	Immediately
Increased extension support for agriculture including agriculture practices and inputs such as improved seed varieties	1	4	4	9	Department of Agriculture	Unknown	Unknown
Increased construction of *pucca* houses to deal with prolonged rainfall	4	4	1	9	*Panchayat Sarpanch* and *Sachiv*	INR 250,000 to 300,000	One month
Awareness campaigns on government programs such as PM PVTG Development Mission, Mukhya Mantri Jal Swavlamban Abhiyan	2	4	5	11	*Panchayat Sarpanch* and *Sachiv*	Unknown	Immediately

We asked the respondents to evaluate their adaptation options on three parameters: Availability, accessibility, and affordability, and rate them on a scale of 1 to 5. 1 indicates a significant challenge for the community as the option is not available, accessible, or affordable, while 5 signifies that the option is readily available, easily accessible, or highly affordable.

Note: A lower total score implies higher priority for an adaptation option.

Score above 3 out of 5 | Score of 3 out of 5 | Score below 3 out of 5

Several CSOs and MFIs are present across the regions, and actively contribute to building climate resilience

Location	Name of CSO (NGOs, Foundations, Research Organizations)
Telkoi, Keonjhar, Odisha	Gram Vikas
	Women's organisation for Socio-Cultural Awareness (WOSCA)
	Gram Utthan
	KIRDTI
Mahuadanr, Latehar, Jharkhand	Badlao Foundation
	E Mission Education and Welfare Trust
	PRAVAH
	Manav Kalyan
	Sahayogi Mahila
	Bharat Rural Livelihood Foundation (BRLF)
Kishanganj, Baran, Rajasthan	Dusra Dashak
	Sankalp
	Gram Seva Vidyapeeth Samiti (GSVS)
	Manav Seva Sansthan
	Manjari Foundation
	Piramal Foundation

Location	MFIs	Banks
Telkoi, Keonjhar, Odisha	L&T Microfinance	Bank of India
	Fusion Microfinance	State Bank of India
	Samasta Microfinance	Utkal Grameen Bank
	Bharat Microfinance	
	Arohan Microfinance	
	Annapurna Microfinance	
Mahuadanr, Latehar, Jharkhand	Micro Enterprise and Sustainable Project	Axis Bank
	Nav Bharat Jagriti Kendra	Canara Bank
	Vedika Credit Capital Ltd.	Jharkhand Rajya Gramin Bank
	Save Microfinance Pvt. Ltd.	State Bank of India
	Prayatna Microfinance Ltd.	Airtel Payments Bank
		Fino Payments Bank
Kishanganj, Baran, Rajasthan	Aajevika Bureau	State Bank of India
	Shree Kshetrapal Co-operative Credit Society	Punjab National Bank
		Baroda Rajasthan Kshetriya Gramin Bank

An entity with strong local connections can help facilitate the LLA approach by mobilizing communities and assessing their adaptation strategies

Since the GPDP is developed annually, we propose creating a cohort of climate champions within the Gram Panchayat that can become go-to resources for facilitation of the toolkit.

Some potential options for local facilitation include:

- Entrepreneurs
- CSO
- Panchayat employees
- Line department officials
- Local influencers

Options for local climate champions	Pros	Cons
Entrepreneurs	• Have a deep understanding of local needs and market dynamics	• May not have the capacity to mobilize broader community participation • May prioritize profit over community needs
CSO	• Have established relationships within communities • Possess knowledge of local languages and challenges • Experienced in implementing community-based projects	• Might have biases or agendas that don't align with all community needs
Panchayat employees	• Have formal authority and connections within local governance structures • Familiar with government schemes and convergence opportunities • Can potentially integrate adaptation toolkit into existing development plans	• May lack specialized knowledge about unique local needs • Could be influenced by local politics or dominant groups • May have limited capacity or motivation for additional responsibilities
Line department officials	• Have access to government resources and schemes • Can ensure alignment with broader policy objectives	• Could face challenges in coordinating across different departments • May have limited capacity or motivation for additional responsibilities
Local influencers	• Have strong social capital and respect within PVTG communities, enabling community participation • Understand local power dynamics and decision-making processes	• Their personal interests may influence their advocacy, potentially leading to biased adaptation strategies.

The selected climate champions should understand local climate hazards, review relevant literature, analyze historical weather data, and be aware of future climate scenarios. They should also know about adaptation interventions and their impacts to guide respondents on effective options.

In the face of climate change, PVTG households have three strategies for building resilience. A set of interventions can enable these households to transition from a lower to a higher resilient pathway

Hanging-in	Stepping-up	Stepping-out
Coping and maintaining current livelihoods by protecting against immediate risks	Improving existing livelihoods and building resilience to climate shocks and stresses	Transition to diverse income sources /livelihoods for long term sustainability and resilience

Stylized interventions for a PVTG household, frequently experiencing flooding that damages their home, crops, and livestock. These interventions enable the PVTG household to take specific resilient pathways.

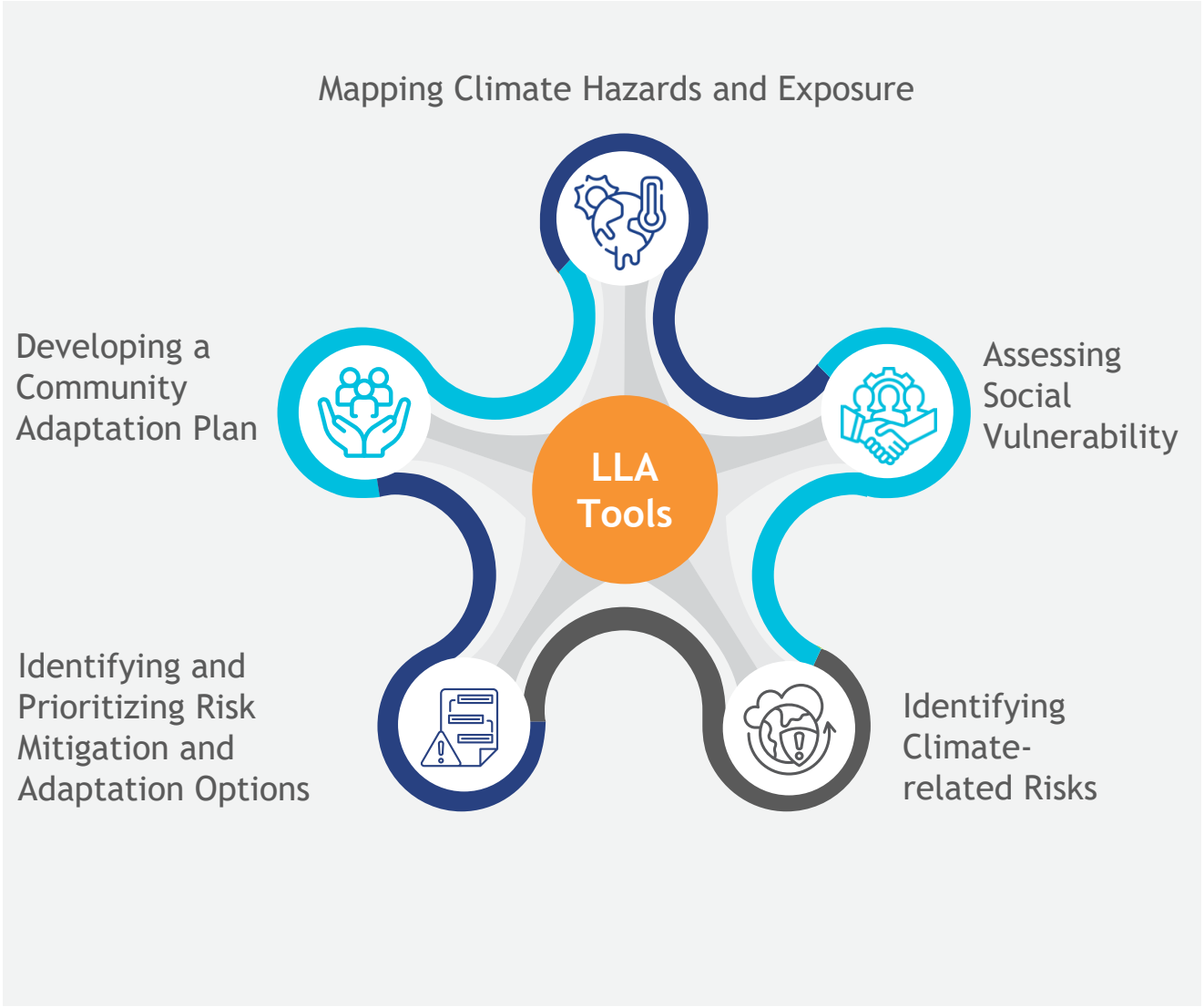
- Household is able to stabilize existing livelihoods.
- Able to protect itself against immediate risks.
- Has access to basic financial resources, infrastructure and government support.

- Household is enhancing its financial resilience through continuous learning and adaptation.
- Has access to diverse public and private financial resources,
- Hass access to strong social capital, and knowledge and skills.

- Household has built resilience to short-term and long-term impact of climate change.
- Has access to and knowledge of financial products and services.
- Uses community and government support, and have alternate livelihood choices.

Source: Dorward. A. et. al. 2009. Hanging in, stepping up and stepping out: livelihood aspirations and strategies of the poor

Our tools and approach is aligned with the Locally Led Adaptation principles announced at the 2021 Climate Adaptation Summit



LLA Principles

- Devolving decision making to the lowest appropriate level
- Addressing structural inequalities faced by women, youth, children, people with disabilities, people who are displaced, Indigenous Peoples and marginalized ethnic groups
- Investing in local capabilities to leave an institutional legacy
- Providing patient and predictable funding that can be accessed more easily
- Building a robust understanding of climate risk and uncertainty
- Flexible programming and learning
- Ensuring transparency and accountability
- Collaborative action and investment

Our PVTG community adaptation planning tools align with the tools and process suggested for the development of the GPDP

1	Social mapping tools to depict habitation patterns and the nature of housing and social infrastructure, such as roads, drainage systems, schools, and drinking water facilities	Mapping climate hazards and exposure tools to draw livelihood assets exposed to hazards, such as crop fields, water bodies, roads, buildings, and livestock
2	Natural resource mapping tools to map the resources in the locality, such as topography, land, forests, waterbodies, fields, and vegetation, among others	Mapping climate hazards and exposure tools to draw resources, such as crop fields, waterbodies, vegetation, and forests, among others
3	Timeline diagram tools to capture the chronology of significant events as recalled by the local community, which includes discussions on changes related to education, health, food security, and economic conditions	Hazard perception mapping to assess the trends of the major hazards prevalent in the area over the years, along with the impacts of each hazard on their livelihood assets
4	Seasonal diagram to document seasonal changes and patterns within a community over a year, such as changes in agricultural activities, rainfall, food availability, and other socioeconomic factors	Hazard perception mapping to draw a yearly calendar and note the community's perception of hazards and how their livelihoods have changed over time due to the hazards
5	Resource for planning tools to identify social resources, natural resources, human resources, and financial resources.	Assessing social vulnerability tools to identify human, financial, natural, physical, and financial capital

Sectors we work in

Providing impact-oriented business consulting services


Banking, financial services, and insurance (BFSI)


Water, sanitation, and hygiene (WASH)


Government and regulators


Micro, small, and medium enterprise (MSME)


Social payments and refugees


Youth


Gender equality and social inclusion (GESI)


Education and skills


Digital and FinTech


Agriculture and food systems


Climate change and sustainability


Health and nutrition

Multi-faceted expertise

Advisory that helps you succeed in a rapidly evolving market


Policy and strategy


Products and channels


Research, evaluation, and analytics


Organizational transformation


Digital technology and channels


Catalytic finance


Design thinking and innovation


Marketing and communication


Training


Government regulations and policy


Data Insight


Customer protection and engagement for responsible finance

MSC is recognized as the world's local expert in economic, social and financial inclusion

International financial, social and economic inclusion consulting firm with **25+** years of experience

>300 staff in **10** offices around the world

Projects in **~68** developing countries

Our impact so far

>550 clients

>1,400 publications

Assisted development of digital G2P services used by **>875 million people**

Implemented **>950 DFS projects**

Developed **>300 FI products** and channels now used by **>1.7 billion people**

Trained >11,100 leading FI specialists globally

Some of our partners and clients

Bill & Melinda Gates foundation
MetLife Foundation
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UNCDF
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World Bank Group
CGAP
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Asian Development Bank
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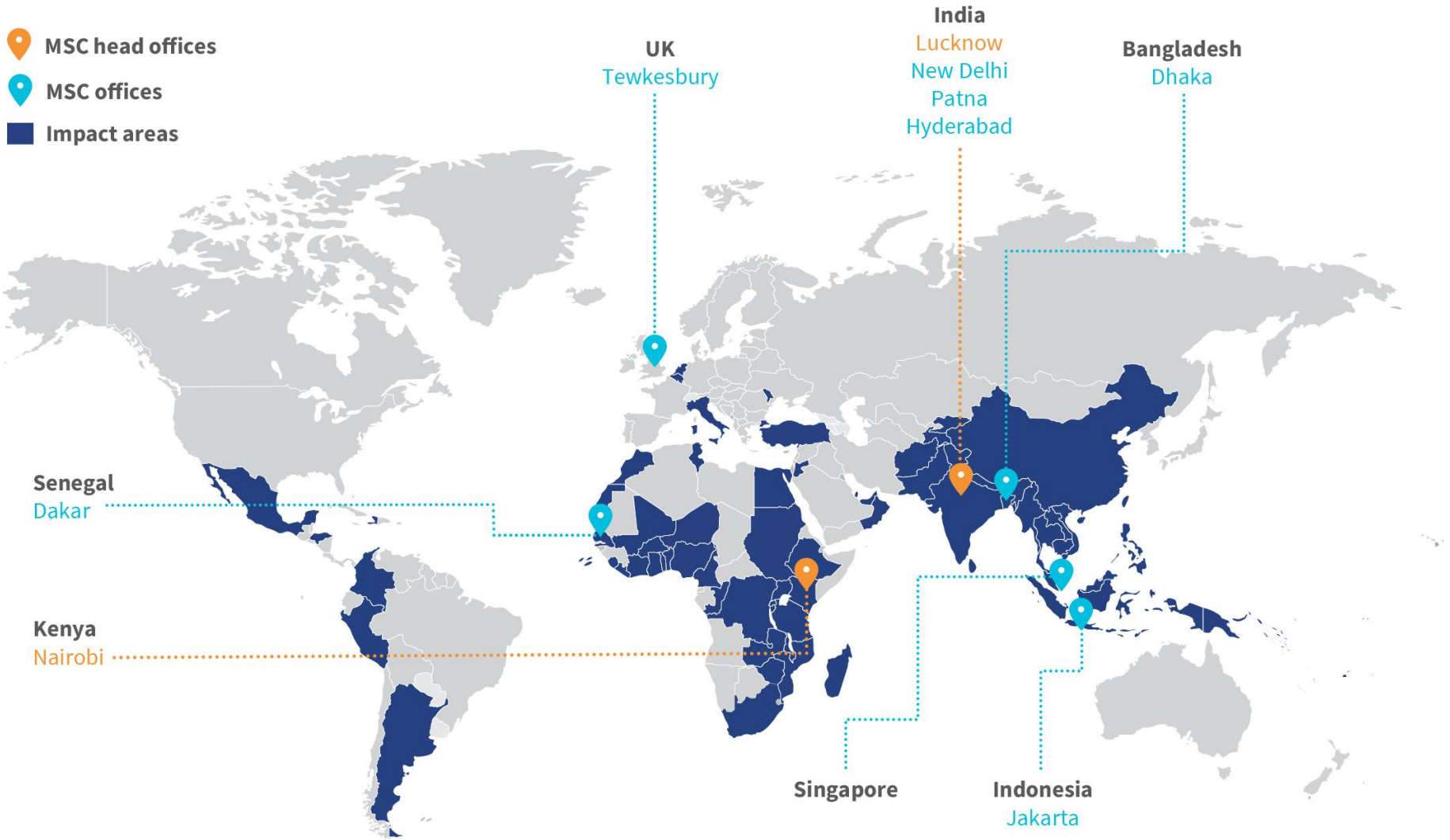

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