STATUS OF LIVELIHOOD IN RURAL MAHARASHTRA

2025



An **AFARM** Publication

Status of Livelihood in Rural Maharashtra 2025

Action for Agriculture Renewal in Maharashtra (AFARM)

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FOREWORD

आचार्य देवव्रत
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January 2026



FOREWORD

Rural Maharashtra has been the cradle of the State's civilisation, culture, and economy. Any meaningful vision of a prosperous, inclusive, and developed Maharashtra must therefore place rural livelihoods at its very centre.

In this context, I appreciate the initiative of Action for Agricultural Renewal in Maharashtra (AFARM), Pune, one of the State's respected civil society networks, established in 1969. For more than five decades, AFARM has worked in close partnership with Government institutions, academic bodies, civil society organisations, and community-based institutions to promote sustainable, inclusive, and resilient rural livelihoods across Maharashtra.

The Status of Livelihood in Rural Maharashtra Report 2025, prepared by AFARM, is a timely and valuable contribution. The Report presents a comprehensive, evidence-based assessment of rural livelihoods across regions and social groups, and outlines pathways towards secure, dignified, and sustainable livelihoods by the year 2035. At a time when rural India is facing complex challenges arising from climate change, market uncertainties, natural resource degradation, and social transitions, such informed reflection is both necessary and welcome. I trust that this Report will serve as a meaningful reference for policymakers, development practitioners, researchers, and all those concerned with the well-being of rural Maharashtra.

I am further pleased to note that AFARM is organizing the Maharashtra Rural Livelihoods Summit 2026 at YASHADA, Pune, as a State-level platform for dialogue, reflection, and convergence among policymakers, practitioners, researchers, and community representatives.

In my capacity as Governor of Maharashtra and Gujarat, I have been consistently emphasising the importance of Natural Farming and the promotion of indigenous breeds of cows as pathways towards sustainable agriculture, ecological balance, reduced input costs and enhanced rural incomes. Natural Farming strengthens soil health, conserves water, protects biodiversity, and restores harmony between agriculture and nature.

The future of rural livelihoods lies in approaches that are environmentally sustainable, economically viable, and socially inclusive. This requires a shared responsibility of governments, civil society, academic institutions, markets, and citizens - to work together in a spirit of cooperation and commitment.

I congratulate AFARM and convey it my best wishes for the success of the Maharashtra Rural Livelihoods Summit 2026.

(Acharya Devvrat)

MESSAGE



DEPUTY CHIEF MINISTER
MAHARASHTRA STATE

Date: 21st January, 2026

MESSAGE

Rural Maharashtra stands at the threshold of a transformative decade as the trajectory of Maharashtra's overall development strives toward a one trillion-dollar economy. The "State of Rural Livelihoods in Maharashtra, 2025" report is therefore timely, offering a grounded picture to facilitate robust and inclusive rural growth. The state has seen impressive advances in infrastructure, connectivity, and sectorial initiatives aimed at strengthening agriculture, improving rural incomes, and expanding social protection. Yet, the rural economy continues to face persistent challenges climate shocks, skill gaps, unequal access to markets and services. This report synthesizes evidence from across regions and communities to highlight these realities, while also documenting the innovations and local solutions that are emerging in response.

The state's broader economic roadmap emphasizes agriculture, allied sectors, and rural enterprises in driving growth, job creation, and regional balance. Initiatives to improve rural roads and connectivity, expand irrigation, promote industrial corridors, and foster food processing and agri-business are all interconnected in their impact on village-level opportunities. The flagship social sector programs-health insurance, housing. education, and skill development are crucial to enhancing human capabilities and reducing the vulnerabilities of rural households trapped in cycles of poverty. The Maharashtra State Rural Livelihoods Mission (Umed) has emerged as a powerful platform for women's economic empowerment through Self-Help Groups.

The state's economic vision outlines targets for growth, investment, and sectorial performance up to 2035 and 2047. Our task is to translate these macro targets into tangible improvements in everyday rural lives: stable and rising real incomes, reduced distress migration, greater resilience to shocks, and enhanced voice for those typically left on the margins. That demands convergence-across departments, tiers of government, and with civil society and private partners.

This publication should therefore be read not only as an assessment but as a call to action. It calls for sharpening the focus on the most vulnerable households, for strengthening the ecosystems that support rural enterprises, and for embedding climate resilience and gender equality into the core of every major rural program. It calls for sustained investment and a culture of learning from both successes and failures. I congratulate AFARM its associates for documentation of rural livelihood status and pathways 2035.

(Ajit Pawar)

FOREWORD

Vikas Chandra Rastogi, IAS
Additional Chief Secretary (Agriculture)

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Date : 14th January, 2026



Foreword

Maharashtra stands at a pivotal juncture in its journey toward becoming a USD 1 trillion economy and realizing the vision of Viksit Maharashtra 2047. At the heart of this ambitious transformation lies our rural landscape, where over half of our population continues to draw its strength and sustenance from agriculture and allied activities. However, the challenges our rural communities face today-ranging from intensifying climate risks to market volatility-demand a fundamental shift in our approach.

The publication of "Status of Livelihood in Rural Maharashtra 2025" by AFARM is both timely and essential. This comprehensive report captures the pulse of rural Maharashtra, providing a nuanced situational analysis and a forward-looking roadmap for the next decade. It correctly identifies that we are moving away from a traditional "yield-only" mindset toward a more resilient "income resilience" paradigm.

As the Additional Chief Secretary (Agriculture), I am particularly encouraged to see the report's emphasis on the portfolio approach to livelihoods. Our recent landmark decision to grant "agriculture-equivalent" status to the livestock, poultry, and fisheries sectors is a testament to the Government's commitment to diversifying rural income streams. These sectors are no longer just supplementary; they are the anchors of steady monthly cash flow for millions of small and marginal farmers, especially women.

Furthermore, the report highlights the transformative power of Digital Inclusion and Social Capital. Through initiatives like the MahaAgri-AI policy and the strengthening of over 7 million women in Self-Help Groups (SHGs) and 1,600 Farmer Producer Organizations (FPOs), we are building a digitally empowered and institutionally robust rural economy. These platforms are critical for ensuring that technology enhances human capability rather than replacing it.

The "Pathways 2035" outlined in this book-focusing on climate-smart agriculture, integrated water stewardship, and localized skilling through Rural Economic Zones (REZs)-align perfectly with our state's priorities. We recognize that sustainable livelihoods are not just about subsidies but about an architecture of local empowerment and ecological stewardship.

I commend the team at AFARM for their rigorous field-based insights and their collaborative spirit in bringing together over 100 practitioner organizations to draft this roadmap. This book is not just a situational report; it is a call to action for policymakers, researchers, and civil society to work in convergence.

I am confident that the insights within these pages will serve as a valuable guide for all stakeholders as we strive to build an inclusive, sustainable, and prosperous rural Maharashtra.

(Vikas Chandra Rastogi, IAS)
Additional Chief Secretary (Agriculture)

PREFACE



In every village across Maharashtra, the rhythm of life follows the seasons — the sowing, the waiting, and the uncertain harvest. For decades, small and marginal farmers have sustained not only their families but the broader fabric of our rural economy through hard work, resilience, and a deep bond with the land. Yet today, their struggle mirrors the shifting climate, growing market unpredictability, and a policy environment that often leaves them unseen or underserved.

It is within this context that we at AFARM — a network of non-profits dedicated to advancing sustainable rural livelihoods — have reflected on the lessons of our collective journey. This publication sets forth a series of recommendations grounded in experience from the field, informed by evidence, and shaped by the voices of those who form the heart of Maharashtra's agricultural economy: its small and marginal farmers. These recommendations are not abstractions from policy circles, but pathways tested in practice, emerging from decades of engagement with farming communities across semi-arid, tribal, and rainfed regions of the state.

The Crisis and Its Human Dimension

Across Maharashtra's districts — from Vidarbha's drylands to Marathwada's semi-arid farms — the story of rural livelihoods remains intertwined with vulnerability. Rainfed agriculture still dominates, and the volatility of the monsoon now brings heightened risks due to climate change. Erratic precipitation patterns, sustained droughts, and declining groundwater tables have eroded both productivity and confidence. For smallholders owning less than two hectares, the narrow margins of farming have thinned to the point where survival often depends on diversification or migration.

The statistics, while familiar, conceal lived realities. Behind each percentage point of distress lies a farmer's household rationing fertilizer, a woman pawned her ornaments to secure a loan, a youth leaving for the city in search of uncertain income. It is here that AFARM's member organizations have worked for decades — innovating, adapting, and listening. Through community-based watershed programs, participatory irrigation management, livelihood diversification, and farmer producer collectives, our network has witnessed both the fragility and the extraordinary resilience that define rural Maharashtra.

Our challenge, however, is no longer to diagnose these issues but to integrate the proven solutions from fragmented interventions into coherent, scalable, and locally grounded systems of change. The time has come to transition from pilots to policies, and from projects to sustainable, farmer-owned institutions.

Looking Back: Learning from Four Decades of Rural Work

Since its inception, AFARM's purpose has been to build institutional capacity among rural organizations and amplify farmer voices in decision-making processes. Over the years, our member NGOs have implemented thousands of small and large initiatives that seek to address the changing face of rural poverty — from soil and water conservation in the 1980s to climate adaptation and value chain development in the 2020s.

From these decades of experience, several lessons stand out:

1. **Integrated Natural Resource Management as Foundational:** Where community-led watershed development took root, productivity improved sustainably, migration declined, and women's participation deepened. But where these efforts lacked institutional continuity or market linkages, gains often faded.

2. **Empowered Women as Economic Anchors:** In countless villages, women's self-help groups have become the most reliable vehicles of credit, resilience, and innovation. Programs that invest in women — as entrepreneurs, resource users, or decision-makers — amplify their household's adaptive capacity.
3. **Farmer Collectives as Market Equalizers:** The emergence of farmer producer companies (FPCs) in Maharashtra has demonstrated the potential of aggregation to overcome market asymmetry. Yet many FPCs struggle to balance social objectives with business viability — underscoring the need for long-term incubation and ecosystem support.
4. **Knowledge Systems as Key Enablers:** Farmers adopt innovations most effectively when they draw from peers and trusted local institutions rather than top-down schemes. Participatory extension, farmer field schools, and community resource persons have consistently bridged this gap.
5. **Institutional Convergence as the Missing Link:** Programs delivered in silos — whether government schemes or NGO projects — fail to address the interlinked nature of livelihoods. Convergence across departments, especially agriculture, water, and rural development, creates synergies that optimize impact.

These lessons shape the recommendations presented in the chapter that follows. They remind us that sustainable rural livelihoods cannot rest on subsidies or seasonal interventions alone. Instead, they require an architecture of local empowerment, ecological balance, and economic opportunity sustained by credible institutions.

A Changing Context: Challenges and Opportunities Ahead

Maharashtra is entering a defining decade for rural transformation. Climate shifts are already redrawing production landscapes; digital technologies are altering market access; and young people are reimagining what farming can mean. Against this backdrop, small and marginal farmers face a paradox: they are central to food systems yet often peripheral to profits.

There are, however, grounds for optimism. The state's experience with watershed management, joint forest management, and farmer collectives provides a foundation for integrated livelihood programs. Government policies increasingly recognize farmer producer organizations, private extension networks, and women's self-help groups as legitimate partners. The challenge now is coherence: ensuring that these initiatives align, scale, and reinforce each other rather than operate in isolation.

At AFARM, we see this moment as both a culmination and a new beginning. The collective knowledge built over decades — from our member NGOs, government collaborations, and community networks — provides a repository of strategies that are not just innovative but proven. Our role is to translate these into actionable policy and programmatic frameworks that honour diversity while driving systemic transformation.

Rethinking "Livelihoods" Beyond Subsistence

For too long, livelihood enhancement has been equated with income augmentation alone. But sustainable livelihoods involve much more: security, dignity, choice, and ecological stewardship. Maharashtra's smallholder farmers do not merely seek higher returns — they aspire to stability amid uncertainty, agency in decision-making, and intergenerational continuity of their land-based way of life.

In rethinking rural livelihoods, four dimensions demand renewed focus:

Economic viability: Enhancing incomes through productivity, diversification, and better integration into value chains.

Ecological sustainability: Managing soil, water, and biodiversity in a way that regenerates rather than depletes natural systems.

Regional diversity: Paying close attention to regions that are more vulnerable, poorer and precarious

Social equity: Ensuring inclusion of indigenous populations, women, youth, landless labourers, and marginalized communities so that progress does not deepen inequalities.

Taken together, these dimensions define a vision of resilience that goes beyond mere survival. They point toward a rural economy rooted in dignity — where farmers are producers, not beneficiaries; innovators, not dependents.

AFARM's Role as a Network: Convening and Catalysing

As a consortium of over 100 voluntary organizations, AFARM occupies a unique space between communities, civil society, and government. Our strength lies in collective action — convening knowledge, generating collaboration, and catalysing innovation.

Through regional clusters, member-led task forces, and thematic working groups, AFARM has facilitated peer learning across drought-prone blocks, tribal districts, and peri-urban regions. This collective infrastructure allows us to bridge scales — translating grassroots learnings into district and state-level policy recommendations, and bringing down national program priorities to locally interpretable actions.

Guiding Principles for Action

This publication outlines transformation pathways based on AFARM's principles for improving livelihoods:

1. Localization before scalability. Solutions must first work locally before being replicated widely. A "scale-out" rather than "scale-up" approach allows adaptation across agro-ecological and cultural contexts.

2. Ecological sense as economic logic. Natural resource management cannot be treated separately from productivity and profitability; sustainability itself is an economic asset.

3. People at the centre of transformation. Empowered farmers not only ensure household food security but drive innovation across agricultural systems.

4. Institutional convergence as default practice. Cross-sectoral collaboration must move from rhetoric to routine, making coordination a requirement rather than an exception.

5. Participatory governance as accountability mechanism. When communities control plans, budgets, and outcomes, programs remain relevant and efficient.

6. Evidence-guided planning. Local data on water, soil, crops, and income should drive decision-making, replacing perception-based interventions.

These are not new principles, but their consistent application remains rare. They must, therefore, guide how we interpret every proposed strategy — from crop diversification and water conservation to FPO strengthening and digital access.

A Call for Collaborative Action

No single actor — not government, civil society, or the private sector — can resolve the structural challenges of rural livelihoods in isolation. The rural economy is a living system; it requires multi-stakeholder collaboration that balances short-term incentives with long-term sustainability.

AFARM envisions itself as an ecosystem convener — a bridge between policy and practice. We urge state agencies, banks, and development partners to see community-based organizations not as contractors but as co-creators of change. With the right institutional mechanisms for collaboration, Maharashtra can pioneer a new model of public–civil partnership rooted in trust, evidence, and shared accountability.

Dr. Venkat Mayande
Chairperson, AFARM

ACKNOWLEDGEMENTS



The Status Report of Livelihoods in Rural Maharashtra 2025 is the outcome of a rigorous, collaborative, and consultative process that brought together diverse expertise, institutional experience, and field-based insights. This report would not have been possible without the valuable contributions and guidance of several individuals and institutions, whom I gratefully acknowledge.

I would like to place on record my sincere appreciation to Mr. Vijay Mahajan, who spearheaded the overall situational analysis and provided intellectual leadership in framing the study. His deep understanding of rural development and livelihoods greatly enriched the analytical foundation of the report.

I am grateful to Mr. Mohsin Khan, who led the study team and played a pivotal role in drafting *Part I: Situational Analysis*. He was ably supported by a committed study team comprising Mr. Vijay Nadkarni, Mr. Saket Kulkarni, Ms. Vaishali Gawandi, and Mr. Rahul Mane, whose collective efforts in data analysis, field insights, and thematic research strengthened the empirical rigour of the report.

I extend special thanks to Dr. Yamini Atmavilas, who undertook the critical task of reorganising and editing the entire report and also led the complete drafting of *Part II: Maharashtra Rural Livelihoods Pathways 2035*. Her ability to synthesise diverse inputs into a coherent, forward-looking framework has been instrumental in shaping the strategic vision of this report.

We are deeply indebted to the sector experts, practitioners, and thought leaders who participated in the thematic roundtable consultations hosted by AFARM and provided valuable inputs and recommendations shape the Part II: Pathways 2035. I also acknowledge the meaningful contributions received from AFARM's member NGOs, whose grassroots perspectives and field experiences ensured that the report remains grounded in reality and practice.

I would like to express my sincere gratitude to Dr. Venkat Mayande, Chairperson, AFARM, for mentoring the team throughout the report preparation process and for offering critical strategic guidance that helped sharpen the report's direction, relevance, and policy orientation.

I also acknowledge the constructive role played by the Executive Committee of AFARM, the Maharashtra Rural Livelihoods Summit Organising Committee, and the senior management team of AFARM, whose encouragement, review inputs, and institutional support were vital at various stages of this journey.

I gratefully acknowledge the financial support provided by Cummins India Limited and NABARD, which made this comprehensive study and publication possible. Their support reflects a shared commitment to strengthening sustainable, inclusive, and climate-resilient rural livelihoods in Maharashtra.

Finally, I thank my team at AFARM for their secretarial support & hard work enduring the report was ready for the release on time.

This report is truly a collective endeavour, and I extend my heartfelt thanks to all those who contributed, directly and indirectly, to its successful completion.

We hope this report will be a useful resource for the policymakers, practitioners & researchers, providing a strong knowledge base for different stakeholders.

Subhash Tamboli

Executive Director, AFARM, Pune

EXECUTIVE SUMMARY

Rural livelihoods in Maharashtra in 2025 are shifting from a yield-only mindset to an income resilience paradigm. The engine is not a single sector; it is a portfolio. Natural capital still anchors production, yet volatility in water and weather is now counterbalanced by physical networks that move inputs and outputs predictably, by financial rails that reach the last mile at lower cost, and by social institutions that convert collective trust into investible cash and bargaining power. This rebalancing is visible inside agriculture itself, where allied activities such as livestock, horticulture, forestry and fisheries deliver steadier monthly cash than field crops, cushioning households against rain and price shocks. What changes livelihoods, then, is not just more crop output but tighter coupling between water buffers, asset-building finance, short-cycle allied activities, and market infrastructure that gives the farmer time and price.

Water remains the invisible cash flow. Maharashtra's aquifers are largely hard rock basalts with shallow, seasonal storage, which is why the same groundwater table can look comfortable after the monsoon and precarious by the rabbi harvest. The latest round of monitoring shows comfortable state wide headroom on paper, but with regional stress belts in Marathwada and parts of western districts where pre-monsoon levels fall sharply and bore well costs rise. This seasonal heartbeat is what pushes households into debt and migration in bad years and enables strategic selling in good years. The surface water mosaic 97,000-plus small, mostly public, man-made bodies puts micro-scale storage in the village, not far away behind a canal head. Nearly eight in ten are designed primarily to recharge groundwater rather than to irrigate directly, which is exactly what a kitchen garden, a two-cow dairy, or a lift pump for kharif sowing needs. Where these bodies fill reliably, the shallow aquifers at field-edge are renewed, women's time to fetch water falls, and small engines can lift affordable volumes. Where siltation and encroachment choke them, scarcity returns and tankers absorb the cash that would otherwise buy feed or seed.

Forests add both buffer and risk. About one-sixth of the state is under forest cover, with a near three-to-one split between dense and open categories, and a striking 29 percent of forest cover lying outside the Recorded Forest Area precisely the tracts most accessible to grazing herds and NTFP collectors. In tribal belts, households draw daily value from these commons' fuelwood, mahua, tendu, bamboo shoots even as crop damage compensation and guarding costs rise along sanctuary edges. The policy implication is not simply to protect forests but to manage the forest farm interface: stall feeding, fodder seeding on commons, and proximity processing of minor forest produce so that forest value becomes cash in the village without degrading the resource.

Household budgets confirm both diversification and pressure. Rural monthly per-capita expenditure is modestly above the national average, but the food shares of spend is lower than the all-India rural mean, indicating heavier claims from transport, energy, health, and education. Cereals have shrunk to a small slice of total spend, while milk now leads identified food groups and beverages/processed foods take a rising fifth of the food purse. The cereal plate itself is a two-grain spine (wheat and rice) with millets as a persistent minority. Read together, these patterns say two things. First, allied activities (especially dairying and vegetables) already sit at the centre of rural consumption, so financing feed, chilling, and last-mile logistics is really financing household cash flow. Second, non-food costs fuel, travel to work or care, medical outlays are the new shock absorbers that compete with food in bad months. A resilient livelihood, therefore, is one that generates weekly cash from milk, poultry batches, petty retail, and services, with crops providing seasonal surplus and asset-building.

Work supply and work done align with this budget story. Rural labour-force participation is high in the state, particularly for women when unpaid family work is counted, but youth worker population ratios in villages hover below two in five, with a visible male female gap. The first durable job is less often on the farm and more often in construction, repair services, logistics, food retail, or basic processing. Where district towns offer apprenticeships, custom-hiring centres, skill bridges, and public works that align with lean seasons, youth attach faster and stay longer. Where such bridges are thin, seasonal migration remains a rational hedge. Migration in Maharashtra is

therefore not a binary of distress versus aspiration but a spectrum: a push from rainfall and price volatility and a pull from peri-urban services and MSMEs. The rural system becomes inclusive when local pulls milk routes, aggregation centres, pack houses, grading labs, small processing units are strong enough to match the urban pull-on wages and predictability.

Finance is the plumbing behind this shift from yield to income. The NABARD districts' PLPs are not the story by themselves, but they sharpen the picture of where formal credit can switch on or scale the levers that the report identifies. Across the coastal and peri-urban belt (e.g., Raigad), MSME working capital towers over farm term loans, signalling a strong non-farm spine anchored in hospitality, logistics, and processing. In drought-prone interiors (e.g., Solapur, Beed), credit maps point to water resources and mechanisation as the first risk-control wedge; once variance is tamed, food and agro-processing and horticulture lines become meaningful ladders for value capture. In tribal districts (e.g., Nandurbar, Gadchiroli), storage, soil conservation, small livestock, and proximity processing show up as creditable projects with short payback, matching the realities of small holdings and higher climate vulnerability. Read as livelihoods, these are not siloed 'schemes' but cash flow designs: drip kits linked to KCC cycles; dairy sheds paired with bulk coolers and assured routes; packhouses matched with receivables finance; custom-hiring centres that convert expensive peak-season labour into affordable service hours.

This is why the most powerful unit of planning is not a sector but a portfolio at district scale. A portfolio has three jobs. First, stabilise the base: expand assured water footprints through micro-irrigation and watershed works that fit hard-rock hydrogeology; treat water fodder animal health as one investment system; and make PMFBY[1] and WBCIS[2] settlements timely enough to be genuine shock absorbers. Second, multiply short-cycle cash: lean into dairying, poultry, fisheries, and vegetables where demand is proximate; finance input bulks through SHG federations and FPOs to lower unit costs; and route working capital against offtake to shorten the producer's cash-conversion cycle. Third, move up the chain: put grading tables, assaying, packhouses, pre-coolers, driers, and basic mills close to production; use warehouse receipts to turn harvest into an asset with time value; and finance receivables so that small producers are not lending to their buyers by default.

Markets are changing in ways that reward this portfolio logic. Digital trade and e-mandis improve price discovery but only pay in full when the village has quality testing, storage, and logistics otherwise the platform simply spot-prices distress. Horticulture premiums are real but evaporate without cold links and crates. Milk prices hold as long as route density and chilling keep bacterial counts low and payments weekly. Fisheries can be cash engines in the Konkan, but they need safe landing, ice, cold boxes and credit lines designed for batch cycles, not only annual terms. The same is true for oilseeds and pulses in the dry belts: small expellers, dal mills, and cleaners capture margins that otherwise leave the district; and they hire locally.

Two more stitches make the weave hold. First, institutional depth: PACS that actually intermediate inputs and storage; BC networks that cut the cost of last-mile transactions; SHG and FPO federations that negotiate input prices and offtake; PRI engineering capacity that matches roads, drains, and water works to village geology and settlement. Second, human capital: health spending crowds out investment when the nearest primary care is unreliable, and schooling that does not connect to actual district jobs keeps youth in limbo. Converging agri-skilling with MSME apprenticeships and service-sector training in district towns is the bridge between the farm and the bazaar.

Put together, the system that lifts incomes is simple to describe and demanding to execute. When shallow aquifers are reliably refilled, small assets are financed on time, allied activities keep weekly cash alive, and market infrastructure buys the farmer time and price, the household diversifies away from vulnerability. When any one breaks when a percolation tank silts up, when a claim takes a year to settle, when a milk route is thin, when a grader is 40 kilometres away the entire weave thins, and migration becomes the only predictable income. Maharashtra already has each of the parts in many places. The task now is to stitch them deliberately in the belts that

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[1] *Pradhan Mantri Fasal Bima Yojana*
Government crop insurance that covers yield losses (pest, disease, flood, drought, etc.) based on actual yield estimates

[2] *Weather Based Crop Insurance Scheme*
Index insurance that pays out based on weather parameters (rainfall, temperature, humidity, etc.) crossing predefined thresholds, not on measured yield.

lag: finance storage where horticulture is rising; add receivables finance where processing is nascent; intensify water fodder milk where rainfall risk is highest; and use producer and women's institutions as the universal conduit so that small transactions can be bankable at scale.

Inter sector dynamics and interplay

A livelihood in rural Maharashtra is increasingly a choreography across sectors rather than a crop-by-crop ledger, and the choreography shows in the way roads, power, storage, markets, finance, health, education and social protection lean on each other. The road grid maintained by national, state and district agencies spans about 3.28 lakh kilometres as of March 2024 and sits alongside a growing lattice of pack houses, ripening units and cold rooms under MIDH and private investment, which together make grading, chilling and short holds investable when routes are reliable. Where movement and storage are predictable, village enterprises can sell into time and quality premia, and where either is thin, households sell into cash urgency and price dips. Public stocks deepen that stability, with 902 PDS godowns and around 7.23 lakh metric tonnes of capacity, while coverage reaches 265.20 lakh ration cards with Priority House-holds rising to 106.55 lakh, so the food system frees cash for feed and inputs in lean months rather than crowding them out. The same pattern runs through finance. Kisan Credit Cards keep crop working capital liquid, but resilience comes from small term assets like drip kits, pump sets, sheds, chillers, crates and dryers, and from working capital that matches batch cycles in horticulture, fisheries and MSMEs. The numbers explain why this plumbing matters. The rural credit to deposit ratio sits at about 67.3 percent against roughly 100.9 percent in urban centres, so receivables finance and small ticket term loans are what convert movement into money for small producers. Underneath it all is water. Statewide, the stage of groundwater extraction is near 53 percent, with 302 of 359 assessed blocks in the safe category, yet with sharp stress pockets in Marathwada and parts of the west that turn pre monsoon drawdown and feeder hours into the difference between strategic selling and distress. Household budgets confirm the shift from a yield only mindset to an income and resilience portfolio. Rural consumption averages about ₹4,145 per person per month, the food share is about 42.74 percent, and cereals are only about 4.76 percent of total spend, which is why weekly cash from milk, vegetables, poultry, fisheries and petty trade keeps farm decisions rational by buying time, while crops supply the seasonal surplus and the asset base that households build on.

Human development is the muscle and the memory of this system. As clean fuel, electricity, water and sanitation reach last mile households, time and health shocks that often sit on women's shoulders ease, and unpaid care time begins to convert into paid hours in dairying, food retail, care services and food processing. The multidimensional poverty profile shows rural deprivations falling quickly: clean cooking from about 21.4 percent to 8.6 percent, sanitation from about 19.4 percent to 7.7 percent, drinking water from about 8.9 percent to 4.0 percent, electricity from about 5.2 percent to 1.5 percent, with schooling and attendance gaps also shrinking. Each of these is a time and risk variable disguised as a service, and when these frictions ebb together two things change immediately. First, women's unpaid time converts into paid hours close to home. Second, households can stack income lines, milk routes, seasonal farm work, gig logistics and apprenticeships, without blowing up the day on chores or queuing for public goods. Schooling is the hinge that turns today's time gains into tomorrow's earning power. The system is vast, with over one lakh schools, about 2.11 crore enrolments and 7.4 lakh teachers, yet the taper from primary to secondary, more than seven thousand single teacher schools in tribal and hilly belts, and pupil teacher ratios that mask thin staffing in remote habitations, mean the step into skill bearing grades remains the bottleneck that shapes first jobs. In practice this is why many rural youths find their first stable roles in construction, logistics, hospitality, health support and repair services in district towns. When roads and transport make commuting predictable, those jobs become holdable year-round while farm operations become a seasonal second line rather than the only line. Social protection and public works then act as stabilisers, not substitutes, for markets. In the last two years MGNREGA households rose from about 21.21 lakh to about 25.72 lakh and person days from about 7.88 crore to about 12.02 crore, while orchard planting has held near 39 thousand hectares annually, so wage support and asset creation arrive together. Keep the finance rails aligned with this human capital shift, with branch and BC reach, batch aligned working capital and receivables finance, and the gains show up as thick weekly cash rather than thin seasonal spikes.

1 INTRODUCTION

Livelihood in rural Maharashtra is not just about income or employment, it is about rhythm, resilience, and relationships with land, caste, nature, and community. It is about how people live, what they inherit, where they stay, and why some manage to adapt while others struggle. This study explores the present state and the shaping forces behind rural livelihoods in Maharashtra through the lenses of natural resources, social capital, and the economy. Rural Maharashtra has always been in flux, from cooperative sugar factories in the western belt to drought-driven migration in Marathwada and Vidarbha. Land reform efforts, farmer movements, and caste-based mobilisations have opened doors as well as created fresh barriers. Traditional farming, once anchored by seasonal rhythms and community systems, is now steered by borewell economics, debt cycles, and volatile markets. Labour markets have changed with large-scale rural-to-urban migration, especially among youth. Water access, land quality, and forest rights still divide households into those who manage and those who barely survive, while the gap between policy promises and ground reality remains wide.

Maharashtra's numbers underline these pressures. According to 2011 census, roughly fifty-five per cent of residents live in rural areas, a little over six crore people[3]. The 2021-22 Economic Survey of Maharashtra mentions that only about seventeen percent of cultivated land is under assured irrigation, leaving most farmers dependent on rain[4]. In 2023 the state recorded[5] 2,851 farmer suicides, with Vidarbha and Marathwada accounting for the highest share in the state. Scheduled Tribes, accounting for 8.9 percent of Maharashtra's population[6], are heavily concentrated in districts such as Nandurbar, Gadchiroli, and parts of Nashik, where indicators of livelihood vulnerability such as poverty rates, limited land ownership, forest dependency, and inadequate access to health and education are significantly higher compared to the state average[7]. These statistics frame a rural economy that is environmentally stressed and socially uneven.

Amid the shifting realities of rural Maharashtra, it becomes necessary to revisit what we mean by livelihood. Drawing on the widely accepted framework articulated by Gordon Conway in 1991[8] and elaborated by Ian Scoones in 1998[9], livelihood refers to the capabilities, assets (both tangible and intangible), and activities required to sustain a means of living. A livelihood is considered sustainable when it can cope with and recover from shocks and stresses, and maintain or enhance its assets and capabilities, while not undermining the natural resource base for future generations. This conception links economic survival with social identity and ecological balance. In the State, where households face multiple layers of risk, including climatic, institutional, and structural factors, this understanding offers a valuable lens. Although the study does not strictly apply the Scoones framework, its spirit informs the inquiry by centring the lived experiences of individuals navigating uncertainty, scarcity, and aspiration in an evolving rural economy.

1.1 Scope and Methodology

To capture the full picture, this report follows a layered framework that moves from an analysis of livelihoods in the context of shifting natural systems, through social structures, and into economic realities. The report is divided into three sections. **Part 1** brings together a secondary review of data and literature to provide a picture of livelihoods and its natural, economic, social and policy landscape; Chapter two assesses financial ecosystem, incomes, employment, migration, enterprise, poverty, labour and employment landscape, Chapter three examines social development and capital, including health, education, self-help groups, farmer producer organisations, caste associations, and local

[3] *https://censusindia.gov.in/*

[4] *https://mahades.maharashtra.gov.in/*

[5] *https://ncrb.gov.in/*

governments. Chapter four outlines the role of agriculture crops, horticulture, livestock and fishery sector as a key source of rural livelihood, Chapter five assesses water, forests, land, biodiversity, and climate, recognising that ecological foundations set hard limits on rural opportunity Chapter six focus on digital inclusion in agriculture, finance, skills, healthcare, schools, social protection and welfare delivery. This arrangement lets us see how ecological fragility, social inequality, and economic vulnerability intersect to shape what rural households can or cannot achieve. Field evidence and secondary datasets are used side by side to keep the analysis both grounded and comparative. **Part 2,** "Pathways 2035" presents recommendations for transforming rural livelihoods by 2035.

Part 1 is based on a mixed-methods analysis using secondary data to guide field inquiry while drawing on ground-level insights to deepen and contextualize broader trends. Firstly, official data sources were analysed to identify regional patterns and livelihood disparities. Secondly, these analyses are deepened through field visits and direct engagement. Nine districts are selected for their agro-climatic spread across Maharashtra's nine zones - Sindhudurg sits in the South Konkan Coastal zone with lateritic, high rainfall conditions that support paddy, horticulture and fisheries, Raigad is in the North Konkan Coastal zone with a strong peri-urban pull, fisheries and short-cycle livestock, Satara lies in the Sub-Montane belt on the leeward Ghats with horticulture and dairy corridors stabilised by irrigation pockets, Solapur represents the Western Maharashtra Scarcity zone with semi-arid Deccan basalt and a jowar, bajra, pulses and oilseeds mix that needs mechanisation and water investments, Beed straddles the Scarcity and Central Maharashtra Plateau interface in drought-prone Marathwada where allied cash flows from milk and horticulture are rising, Akola and Yavatmal are in the Central Vidarbha zone with deep black soils and cotton, soybean and tur where diversification into dairy, poultry and processing tames price and rain shocks, Gadchiroli anchors the Eastern Vidarbha zone with high forest share and smallholder, NTFP and proximity processing logic, and Nandurbar sits on the Sub-Montane and Western Maharashtra Plain edge in the Satpura foothills where rainfall and soils shift within short distances, making storage, soil conservation and small livestock crucial.

The recommendations presented in the final section of this report (**Part 2- Pathways 2035** - are the culmination of a multi-source, consultative, and evidence-led process designed to identify actionable strategies for building resilient, inclusive, and climate-ready rural livelihoods in Maharashtra. The process was guided by four overarching questions:

1. What structural transformations are needed to secure livelihood resilience in the face of climate and market shocks?
2. How can social and institutional capacities be strengthened to make livelihood systems more equitable and inclusive?
3. Which successful models from Maharashtra and other states offer evidence-based pathways for scaling?
4. What governance and policy levers can support systemic transformation by 2035?

These questions were analysed through the lens of three intersecting dimensions: ecological sustainability, social equity, and economic diversification.

[6] *https://censusindia.gov.in/*

[7] *NITI Aayog. (2021). SDG India Index 2020–21: Partnerships in the Decade of Action. Government of India.*

[8] *https://www.ids.ac.uk/download.php?file=files/Dp296.pdf*

[9] *https://www.researchgate.net/publication/251873585_Sustainable_Rural_Livelihoods_A_Framework_for_Analysis*

Thereafter a structured multi-stakeholder consultation process was designed and executed over three stages between June and November 2025:

1. **Pre-consultation synthesis:** Literature, field evidence, and case study findings were consolidated into a briefing note circulated to over 50 practitioners, policymakers, researchers, and donor representatives.
2. **Expert Consultation and AFARM AGM (Q4 2025):** Approximately 50 experts and practitioners participated in thematic working groups. Each group addressed one of the consultation's priority themes: natural resources, enterprise and market systems, gender and inclusion, and technology and finance.
3. **Post-consultation consolidation:** Proceedings and notes were analysed through content coding to identify convergences and divergences in recommendations. Repetitions were merged, and strategies were refined to ensure alignment with viability, policy relevance, and AFARM's strategic priorities.

Stakeholder inputs were complemented with triangulation and external referencing processes. The team conducted a comparative review of state-level livelihood frameworks across India, including those from Odisha, Madhya Pradesh, Gujarat, and Rajasthan. The objective was to identify models and policy instruments that either originated in Maharashtra or were inspired by its innovations, such as watershed-based development and women-led producer enterprises. This comparative learning reinforces Maharashtra's position as a source of scalable rural development strategies.

The compiled recommendations were subjected to a three-stage synthesis and validation process:

1. **Clustering:** All inputs were mapped against the thematic framework.
2. **Drafting:** High-priority strategies were articulated into concrete recommendations with clear linkages to institutional and financial mechanisms.
3. **Peer Review:** A draft of the Pathways 2035 framework was circulated among select experts for peer comments to ensure analytical rigour and policy credibility.

Collectively, this systematic method ensures that the recommendations are both grounded in practice and shaped by collective wisdom, bridging the gap between local innovation and state-scale transformation.

PART I
Situational Analysis

2 STATUS OF ECONOMIC LANDSCAPE AND LIVELIHOOD REALITIES

2.1 Status of the State Economy

Maharashtra's economy demonstrates robust growth in 2024-25, outpacing the national average with real GSDP expansion at 7.3 percent versus India's 6.5 percent. This performance underscores a resilient, services-dominated structure amid uneven sectoral dynamics and persistent regional disparities, particularly in rural and interior districts. Maharashtra's advance estimates project nominal GSDP at ₹45.32 lakh crore and real GSDP at ₹26.12 lakh crore, reflecting broad-based post-pandemic recovery. Agriculture and allied activities lead sectoral growth at 8.7 percent, followed by services at 7.8 percent and industry at 4.9 percent, while per-capita income rises to ₹3,09,340 from ₹2,78,681 the prior year. Fiscal prudence supports this trajectory, with revenue receipts budgeted at ₹4.99 lakh crore against ₹5.20 lakh crore expenditure, targeting a 2.4 percent fiscal deficit and 17.3 percent debt-to-GSDP ratio; banking depth is evident in a 98.5 percent credit-deposit ratio and leading national shares in deposits and credit. Strong monsoons (116.8 percent of normal) expanded kharif/rabi sowing, ₹46.74 lakh MSMEs on Udyam, and top FDI inflows from October 2019 to September 2024 bolster real-side momentum, alongside infrastructure gains like 38,601 MW power capacity. These indicators reveal a finance-rich, services-led economy with improving agricultural prospects, yet they mask spatial and demographic imbalances that limit rural livelihood gains.

2.1.1 GSDP level and Real Growth

Real GSDP growth of 7.3 percent exceeds India's 6.5 percent, with nominal GSDxP at ₹45,31,518 crore and real at ₹26,12,263 crore—nearly 25 percent above 2019-20 levels.

Table 1: Growth rates of GSVA/GVA and GSDP/GDP for 2024-25

Sectors	Maharashtra (%)	All-India (%)
Agriculture and allied activities	8.7	4.6
Industry	4.9	5.6
i) Mining and Quarrying	3.6	2.8
ii) Manufacturing	4.2	4.3
iii) Electricity, Gas, Water supply and Other Utility Services	6.5	6.0
iv) Construction	6.8	8.6
Services	7.8	7.3
i) Trade, Repair, Hotels and Restaurants, Transport, Storage, Communication and Services related to Broadcasting	5.5	6.4
ii) Financial, Real Estate and Professional Services	8.2	7.2
iii) Public Administration, Defence and Other Services	9.4	8.8
GSVA/GVA	7.0	6.4
GSDP/GDP	7.3	6.5

- The real GSDP growth for Maharashtra is 7.3 percent compared to 6.5 percent for India. This signals stronger demand conditions in the state conducive to non-farm rural incomes through construction orders, logistics, retail and local services in market towns.
- Agriculture and allied activities are expected to expand by 8.7 percent, well above the national pace of 4.6 percent. A good farm year usually lifts rural cash flows through crop and livestock sales, raises demand for transport and post-harvest services and improves the ability of households to spend on health and education. The volatility of this component remains a risk, but the current year's outturn is supportive for rural purchasing power.
- Industry is projected to grow by 4.9 percent, below the all-India figure of 5.6 percent. Within this, manufacturing growth is moderate, electricity and utilities are steady, and construction is expanding at 6.8 percent but below the national 8.6 percent. For rural livelihoods this mix implies stable demand for skilled and semi-skilled work, though the softer construction growth may temper casual employment and wage gains in rural and peri-urban sites.
- Services remain the main growth engine at 7.8 percent, slightly above the national 7.3 percent. Financial, real estate and professional services are strong at 8.2 percent and public administration and other services at 9.4 percent, while trade, hotels, transport and communications are slower at 5.5 percent versus 6.4 percent for India. Rural takeaways include continued expansion of finance and government-linked services that reach blocks and talukas, alongside a more measured recovery in tourism, retail and transport that directly affect rural enterprises.

The year 2024-25 therefore combines a strong agricultural year with resilient services and moderate industry. This configuration is generally positive for rural livelihoods through higher farm receipts, steady non-farm services and stable though not overheated construction demand. The next subsection on sectoral GSVA composition will unpack how much of state income originates in each sector and how that aligns with employment and rural income pathways.

2.1.2 District wise GSDP and Growth

Table 2: Division snapshot (2023-24, ₹ crore unless noted)

Division	Nominal GDDP	Share of State GSDP	Real GDDP	Per-capita NDDP (%)
Konkan	15,75,756	38.9%	9,50,399	4,02,769
Pune	9,23,931	22.8%	5,55,262	3,07,120
Nashik	4,96,715	12.2%	2,99,008	2,12,528
Chhatrapati Sambhajinagar	4,46,442	11.0%	2,62,617	1,91,085
Nagpur	3,78,367	9.3%	2,28,230	2,49,703
Amravati	2,34,636	5.8%	1,39,743	1,66,465

A pronounced west-to-east gradient persists, with Konkan (38.9 percent GSDP share, ₹4,02,769 per-capita NDDP) and Pune (22.8 percent share, ₹3,07,120 per-capita) dominating, versus Amravati's 5.8 percent share and ₹1,66,465 per-capita. Sectoral GSVA Composition and Growth Contributions

Maharashtra's 2023-24 first revised estimates place nominal GSDP at ₹40,55,847 crore and real GSDP at ₹24,35,259 crore, an 8.0 percent increase over 2022-23. Services claim 63.8 percent of 2023-24 nominal GSVA (real growth 8.3 percent), industry 25.0 percent (6.2 percent), and agriculture 11.2 percent (3.3 percent), driving overall 8.0 percent nominal GSDP rise.

Table 3: Sector shares in nominal GSVA, 2023-2024

Sector	Share of Nominal GSVA (%)
Agriculture and allied activities	11.2
Industry	25.0
Services	63.8

Source: Economic Survey of Maharashtra 2024-25, para 3.6.1.

Services dominate state income, while Agriculture's share is about one ninth. This means most new value creation is occurring outside farms, even though a large part of the rural workforce remains in agriculture. Services contribute ~5.3 points to growth, amplifying rural spill overs via finance/logistics, while agriculture's low share exposes workforce mismatches.

Table 4: Real GSVA growth by sector, 2023-24

Sector	Real Growth Rate (%)
Agriculture and allied activities	3.3
Industry	6.2
Services	8.3

Source: Economic Survey of Maharashtra 2024-25, para 3.5.1.

Table 5 Indicative contributions to real GSVA growth, 2023-24

Sector	Share (%)	Real Growth (%)	Approx. contribution to GSVA growth (percentage points)
Agriculture and allied activities	11.2	3.3	0.37
Industry	25.0	6.2	1.55
Services	63.8	8.3	5.30
Total	100.00		≈ 7.2

A services-led income structure with strong growth means rising demand for logistics, retail, finance and government services in rural and peri-urban markets, which can diversify household earnings beyond farm work. Industry's mid-single-digit growth supports construction and manufacturing linkages that create non-farm wage opportunities, though their distribution is spatially uneven.

Agriculture's modest growth and smaller income share reinforce why productivity, risk management and value-chain access remain central for rural stability. This will connect directly to the employment and productivity-gap discussion next.

Table 6 Subsector drivers at a glance, 2023-24 (real growth)

Sector - subsector	2023-24 Real Growth (%)	Why it matters for rural livelihoods
Agriculture and allied	3.3	Sector share in nominal GSVA is 11.2 percent, so even modest growth moves rural cash flows.
Crops	0.3	Flat crop growth caps farm-gate gains.
Livestock	7.0	Steady driver of cash income and women's work.
Forestry and logging	7.6	Supports NTFP-linked incomes.
Fishing and aquaculture	20.0	High growth but small base.
Industry	6.2	Sector share is 25.0 percent, important for non-farm wages.
Mining and quarrying	2.9	Localised employment effects.
Manufacturing	6.8	Pulls MSME and ancillary jobs.
Electricity, gas, water and other utilities	8.1	Infrastructure-linked demand.
Construction	5.7	Key to casual rural employment.
Services	8.3	Dominant at 63.8 percent of nominal GSVA, diffuses demand into rural markets.
Trade, hotels, transport, storage, communication, broadcasting	5.6	Direct link to rural enterprises and logistics.
Financial, real estate and professional services	8.6	Expands credit and services reach.
Public administration, defence and other services	11.1	Government outlays feed local demand.

Maharashtra's 2023-24 growth is mainly services-driven, supported by industry and modest farm performance. Real GSVA rose 8.3% in Services, 6.2% in Industry, and 3.3% in Agriculture. Services contributed about five percentage points to overall GSVA growth (63.8% share), Industry about one and a half (25.0%), and Agriculture one third (11.2%), shaping rural income sources.

Agriculture saw 3.3% growth: crops (60% of farm value) were nearly flat (0.3%), limiting overall gains despite good monsoons. Livestock (25% share) grew strongly at 7%, stabilising cash flows for smallholders, especially women. Forestry and logging (13%) rose 7.6%, aiding tribal incomes. Fishing and aquaculture had high growth (20%) on a small base, benefitting specific villages. Diversification within agriculture—milk, small livestock, fisheries—helps cushion crop volatility, but productivity and market access remain crucial for real income growth.

Industry grew 6.2%: manufacturing (58% of industrial GSVA) expanded 6.8%, construction (28%) grew 5.7%—vital for rural and peri-urban casual wages. Utilities rose 8.1%, supporting agro-processing and enterprises, while mining and quarrying increased 2.9%, mainly impacting certain districts. This brings steady, though moderate, non-farm work and MSME opportunities in district towns.

Services (8.3% growth) dominate: real estate, dwellings, and professional services (39%) lead, with financial services (18%), trade and hotels (15%), transport and communication (8%), public administration (7%), and other services (13%). Public administration and other services grew fastest (11.1%), while finance, real estate, and professional services rose 8.6%. Trade, transport, storage, and communication grew 5.6%. Rural areas benefit from government outlays, expanded financial and professional services, and strengthened logistics, retail, and tourism.

Key takeaways: Most new value creation is outside agriculture, but rural labour remains largely farm-based, highlighting a productivity gap. Industry absorbs rural labour mainly through construction and local manufacturing clusters. Services growth reaches villages via finance, administration, education, health, retail, and logistics, now major non-farm income sources. Crop and livestock performance depends on monsoon and feed costs. Construction pipelines affect wage opportunities, while credit and payments adoption will shape service expansion into rural markets.

2.2 Income, Poverty, and Consumption

2.2.1 Income levels and Depth

Table 7 Employment in establishments (per lakh population, 6th Economic Census 2013) & per-capita income at current prices (2023-24, ₹).

District	Employment in establishments / lakh pop.	Per-capita income (₹), 2023-24
Mumbai City	32,038	4,55,767
Mumbai Suburban	17,048	
Thane	12,552	3,90,726
Palghar		
Raigad	9,746	3,15,681
Ratnagiri	9,456	2,45,421
Sindhudurg	11,184	2,79,080
Nashik	9,318	2,49,000
Dhule	7,313	1,89,384
Nandurbar	5,427	1,29,146
Jalgaon	7,014	1,82,696
Ahilyanagar (Ahmednagar)	11,692	2,30,819
Pune	16,334	3,74,257
Satara	22,776	2,41,369
Sangli	19,559	2,58,557
Solapur	14,362	2,53,088
Kolhapur	27,620	2,82,297
Chhatrapati Sambhajinagar	7,988	2,35,677
Jalna	7,866	1,78,329
Parbhani	5,642	1,75,758
Hingoli	5,099	1,47,333
Beed	9,005	1,77,240
Nanded	5,398	1,81,013
Dharashiv	13,145	1,90,383
Latur	8,171	1,93,152
Buldhana	6,393	1,37,235
Akola	11,739	1,97,333
Washim	4,851	1,34,754
Amravati	7,953	1,91,401

District	Employment in establishments / lakh pop.	Per-capita income (₹), 2023-24
Yavatmal	4,926	1,60,088
Wardha	9,844	2,25,691
Nagpur	11,812	3,22,927
Bhandara	12,561	1,93,418
Gondia	9,465	1,83,414
Chandrapur	8,481	2,21,846
Gadchiroli	7,565	1,40,860

Per-capita incomes mirror establishment density, peaking in Mumbai (₹4,55,767, 32,038 jobs/lakh population) and trailing in Nandurbar/Washim. Rural MPCE rose to ₹4,145 (2023-24), but urban-rural gap widened to 78 percent; food share (42.74 percent) trails national rural (47.04 percent), with cereals at 11.46 percent of food spend.

Social gradients persist: ST rural MPCE at ₹3,103 versus ₹4,599 for others; casual labor lowest at ₹3,298 (agri). MPI halved to 0.033 (7.8 percent poor) by 2019-21, driven by standard-of-living gains.Two broad messages emerge from this map: first, per-capita income peaks where formal establishments, diversified services, and manufacturing clusters are dense (Mumbai, Thane, Pune and select western districts); second, the interior belts of Marathwada and much of Vidarbha continue to trail, consistent with lower establishment intensity, higher reliance on agriculture, and thinner urban demand nodes.

2.2.2 Household Consumption Trends Food and Non-Food

Average MPCE and urban rural gap

Table 8 Average MPCE and urban rural gap

Area	2022-23 MPCE (₹)	2023-24 MPCE (₹)	Urban Rural Gap 2022-23 (%)	Urban Rural Gap 2023-24 (%)
Maharashtra Rural	4,010	4,145	66	78
Maharashtra Urban	6,657	7,363		
All-India Rural	3,773	4,122	71	70
All-India Urban	6,459	6,996		

Maharashtra's consumption profile shows higher average spending than the national mean and a widening urban rural divide in 202324. Rural MPCE stands at ₹4,145 and urban at ₹7,363, compared with All-India ₹4,122 and ₹6,996, and the state's urban rural gap has increased from 66 percent in 2022-23 to 78 percent in 2023-24, above the national 70 percent.

Table 9 Fractile Class of Rural MPCE

Fractile class of rural MPCE	05	510	1020	2030	3040	4050	5060	6070	7080	8090	9095	95100	All
Maharashtra	1,781	2,223	2,559	2,916	3,219	3,537	3,885	4,286	4,815	5,661	6,764	10,383	4,145
All-India	1,677	2,126	2,473	2,833	3,162	3,498	3,866	4,304	4,885	5,763	6,929	10,137	4,122

Rural consumption in Maharashtra is consistently higher than the national average across all segments. At the lowest end, the bottom 5% in Maharashtra consume ₹1,781 per month compared to ₹1,677 nationally. By the 5–10% group, it rises to ₹2,223 in Maharashtra (₹2,126 nationally). The middle 30–50% in the state have monthly per capita consumption around ₹3,200 –₹3,600, with the median near ₹3,700. From the 50–80% range, Maharashtra goes from ₹3,885 to ₹4,815, closely matching national trends. For the top 20%, consumption jumps sharply—₹5,661 for the 80–90% group, ₹6,764 for 90–95%, and ₹10,383 for the top 5% (national: ₹5,763, ₹6,929, ₹10,137). The top 5% in Maharashtra consume about 5.8 times more than the bottom 5%, nearly the same as the national ratio of 6.0, illustrating rural inequality. The overall rural average is ₹4,145 in Maharashtra versus ₹4,122 nationally, indicating Maharashtra's higher mean results from slightly higher consumption across most groups.

Table 10: Food and cereals share in total expenditure, 2023-24

Area	Food share (%)	Cereals share (%)
Maharashtra Rural	42.74	4.76
Maharashtra Urban	36.14	3.77
All-India Rural	47.04	4.97
All-India Urban	39.68	3.74

Maharashtra's household spending skews more towards non-food items than the national average, with food comprising 42.74% of rural and 36.14% of urban budgets—both below all-India figures. Within the food budget, cereals occupy a smaller share (4.76% rural, 3.77% urban), mirroring national patterns but remaining slightly lower. This suggests that Maharashtra households allocate more to housing, transport, health, and education, reflecting dietary diversification and increased costs in non-food essentials like energy and medical services.

Table 11 Rural cereal composition and quantity, 2023-24

Monthly per-capita cereal quantity (kg)	Rice (%)	Wheat (%)	Coarse grains (%)	Other cereals (%)
8.34	35.72	51.49	12.42	0.37

In rural Maharashtra, the average person consumes 8.34 kg of cereals per month: wheat makes up 51.49%, rice 35.72%, coarse grains 12.42%, and other cereals just 0.37%. This means monthly intake is about 4.29 kg wheat, 2.98 kg rice, and 1.03 kg coarse grains. Wheat and rice dominate diets, while coarse grains—such as millets—play a smaller but notable role. Although including coarse grains can boost nutrition and strengthen farming against drought, their current share is limited, making any shift towards more diverse and resilient cereal consumption an uphill task.

Table 12 Rural food-group shares in total food spend, 2023-24

Cereals	Milk and milk products	Vegetables	Fruits	Eggs fish meat	Beverages and processed food	Others
11.46	14.69	12.46	9.30	9.16	20.68	22.25

In rural food spending, cereals make up 11.5%, milk and milk products 14.7%, vegetables 12.5%, fruits 9.3%, eggs, fish and meat 9.16%, beverages and processed foods 20.7%, and "others" 22.3%. Three key points emerge: First, milk is the top identified food group, surpassing vegetables and cereals, indicating a shift in rural Maharashtra's diet away from grains. Second, beverages and processed foods account for about one fifth of food expenditure—more than cereals or vegetables and nearly equal to

the total animal protein share—impacting nutrition, costs, and supply chains due to their longer travel and higher prices. Third, the large "others" category—covering oils, sugar, spices, condiments, and prepared foods—shows significant spending on cooking mediums and flavour enhancers. Overall, rural food habits are becoming more diversified and convenience-oriented, with fresh produce, milk, and animal protein now competing with processed items for household spending.

Table13: Rural non-food-group shares in total non-food spend, 2023-24

Fuel and light	Conveyance	Education	Medical	Misc. goods and entertainment	Clothing bedding footwear	Durable goods	Others
11.86	16.23	5.96	14.03	10.72	11.46	11.76	17.98

Non-food spending is dominated by "others" (17.98%) and conveyance (16.23%), with medical (14.03%), durable goods (11.76%), fuel and light (11.86%), clothing, bedding and footwear (11.46%), miscellaneous goods and entertainment (10.72%), and education (5.96%) following. High conveyance costs highlight the challenges of rural commuting for work and services. Medical expenses, making up nearly one-seventh of non-food outlay, signal a significant health burden. Fuel and light form a substantial part of household budgets, reflecting vulnerability to energy prices. Double-digit shares for durables and clothing show ongoing investment in essentials, while the low education spend suggests either limited means or reliance on public provision. Overall, essential expenses like transport, health, and energy restrict rural households' ability to spend more on quality food and productive assets, contributing to a sense of financial squeeze.

Table 14 Average MPCE by social group, 2023-24

	ST	SC	OBC	Others	All
Maharashtra Rural	3,103	3,986	4,242	4,599	4,145
Maharashtra Urban	5,377	5,956	6,580	8,250	7,363

Average MPCE by household type, 2023-24

Social gradients are clear: in rural areas ST MPCE is ₹3,103 versus ₹4,599 for others, and in urban areas ₹5,377 versus ₹8,250, pointing to systematically lower purchasing power among ST and SC households.

Table15 MPCE: Status of work

Self-emp in agriculture	Self-emp non-agri	Regular wage salaried agriculture	Regular wage salaried non-agri	Casual labour agriculture	Casual labour non-agri	Others	All
4,099	4,691	4,184	5,261	3,298	3,628	5,013	4,145

In rural Maharashtra regular non-farm salaried households report the highest MPCE at ₹5,261, followed by self-employed non-farm at ₹4,691, while casual labour households are lowest at₹3,298 in agriculture and ₹3,628 in non-agriculture; in urban Maharashtra casual labour households have an MPCE of ₹4,487 compared with ₹7,551 for regular salaried and ₹7,117 for self-employed, with a small upper tail captured in the "others" category at ₹10,170.

Overall, the pattern is of above-India average spending levels, a strong urban premium, a shift of budgets toward non-food along with rising processed food shares, and pronounced social and employment-status gradients within the state.

2.2.3 Poverty Status

Table 16 Multidimensional Poverty Index (MPI), Maharashtra

Indicator	2015-2016	2019-2021
MPI (All)	0.065	0.033
Share of multi dimensionally poor (%)	14.8	7.8

Maharashtra made significant progress in reducing multidimensional poverty between 2015-16 and 2019-21. The state's MPI dropped from 0.065 to 0.033, and the share of multi dimensionally poor people fell from 14.8% to 7.8%, effectively halving the poverty headcount and reducing average deprivations. This improvement reflects broad gains across health, education, and standard of living, likely linked to better basic services, increased financial inclusion, and rising household assets. While 7.8% of the population remains poor, Maharashtra's rapid pace of reduction places it among the top improving states.

Table 17 MPI Selected States

State	2015-2016	2019-2021
Maharashtra	0.065	0.033
Gujarat	0.083	0.050
Karnataka	0.055	0.031
Tamil Nadu	0.019	0.009
Uttar Pradesh	0.179	0.103
All-India	0.117	0.066

Among peer states, Maharashtra performed better than Gujarat (0.050) and was similar to Karnataka (0.031), while far outperforming high-poverty states like Uttar Pradesh (0.103) and Madhya Pradesh (0.090). Tamil Nadu, with an MPI of 0.009, exemplifies very low poverty through widespread access to services. Maharashtra's progress is largely driven by rural improvements, as rural MPI fell from 0.100 to 0.048, highlighting that gains extended beyond urban areas and contributed significantly to the overall decline in poverty.

Table 18 Public Distribution System coverage (ration cards), Maharashtra (as on 31 Dec.: lakh)

YEARS	Yellow BPL	Yellow AAY	Saffron PHH	Saffron PHH Farmers	Saffron NPH	Annapurna	White	Total
2022	37.01	25.60	90.36	8.87	72.44	0.06	22.21	256.55
2023	36.71	24.83	94.59	8.66	75.52	Neg	22.52	262.83
2024	33.58	25.32	106.55	7.31	70.38	0.00	22.07	265.20

Ration card registrations in Maharashtra rose from 256.55 lakh in 2022 to 265.20 lakh in 2024, reflecting steady or slightly increased coverage. The main change is a sharp rise in Priority Households under the National Food Security framework, up from 90.36 lakh to 106.55 lakh, indicating expanded eligibility or better enrolment. Meanwhile, PHH Farmers declined from 8.87 lakh to 7.31 lakh, likely due to reclassification or improved targeting. Yellow and Antyodaya Anna Yojana cards for those below the

poverty line remain significant, with minor yearly changes. White card counts stay stable, just above 22 lakh, and Annapurna cards have nearly phased out by 2024. Overall, the Public Distribution System is large and increasingly focused on priority households, aligning with reduced food insecurity and improved living standards.

Table 19 Deprivations among the poor (percentage of population deprived by indicator)

Dimension	Indicator	Rural 2019-2021	Rural 2019-2021	Urban 2019-2021	Urban 2019-2021
Health	Nutrition	18.7	9.3	5.0	2.6
Education	Child and adolescent mortality	0.9	0.7	0.7	0.3
Standard of Living	Maternal health	10.5	6.1	3.1	1.7
	Years of schooling	6.3	3.9	1.9	1.3
	School attendance	4.2	1.7	1.5	0.8
	Cooking fuel	21.4	8.6	1.9	0.9
	Sanitation	19.4	7.7	4.3	2.2
	Drinking water	8.9	4.0	0.5	0.2
	Electricity	5.2	1.5	0.8	0.2
	Housing	17.2	8.7	1.8	1.1
	Assets	10.8	5.0	1.8	0.9
	Bank account	5.1	1.5	2.2	0.9

Improvements in Maharashtra's MPI stemmed from a few key achievements:

-In rural areas, deprivation in clean cooking fuel dropped from 21.4% to 8.6%, sanitation from 19.4% to 7.7%, drinking water from 8.9% to 4.0%, and electricity from 5.2% to 1.5%. Housing and asset deprivations were also halved.

-Urban areas, starting with lower deprivation, saw further reductions—sanitation from 4.3% to 2.2% and cooking fuel from 1.9% to 0.9%. Education indicators improved as well, with years of schooling deprivation falling from 6.3% to 3.9% in rural and from 1.9% to 1.3% in urban areas; school attendance deprivation decreased to 1.7% (rural) and 0.8% (urban).

-Health outcomes improved: nutrition deprivation halved in rural areas (18.7% to 9.3%), maternal health deprivation fell from 10.5% to 6.1%, and child/adolescent mortality declined slightly.

Remaining rural gaps are concentrated mainly in nutrition, housing quality, and final access to clean fuel and sanitation, reflecting typical challenges as coverage approaches universality.

2.3 Labour and Employment

Maharashtra's rural economy[10] is shaped by about 1.49 crore households, larger on average (4.3 members) and with a higher sex ratio (981) than urban areas (3.7 members, sex ratio 927). Rural livelihoods rely mainly on self-employment (49.4%) and casual labour (24.4%), while regular salaried jobs are less common (19.8%). In contrast, over half of urban households (53%) depend on regular wages and have less reliance on casual work (8.2%). This makes rural incomes more seasonal and vulnerable, highlighting the need for diversification into non-farm self-employment and stable wage jobs.

[10] *https://www.mospi.gov.in/sites/default/files/publication_reports/AnnualReport_PLFS2023-24L2.pdf*

The rural dependency ratio is high at 45.6, compared to 36.4 in cities, meaning more non-earners per working adult and tighter household finances when jobs are scarce. Demographically, rural areas have a larger share of children and elderly relative to the working-age population. Education indicators reveal progress but persistent gender gaps: 43.3% of rural adults have at least secondary education (51.4% men, 35.1% women), while illiteracy is much higher among women (27.7%) than men (11.3%).

In summary, Maharashtra's rural households face the challenges of large family sizes, a heavy dependency burden, and limited access to regular, well-paid jobs—especially for women due to educational disparities. These factors are crucial for understanding rural employment policies and opportunities in sectors like construction, agro-processing, logistics, and rural retail, as well as barriers such as skills, mobility, care responsibilities, and seasonality.

2.3.1 Labour Supply and Worker Participation Rate

Table 20 LFPR (15-29 years), usual status (ps+ss), Maharashtra (%)

	Rural	Urban	Rural + Urban
Male	57.6	64.2	60.5
Female	25.5	28.0	26.6
Person	42.9	47.6	44.9

About 45% of youth (15-29 years) in Maharashtra are part of the labour force by usual status, with higher participation in urban areas (47.6%) than rural (42.9%). There is a clear gender gap: rural male LFPR is 57.6%, while rural female LFPR is only 25.5%; in urban areas, males are at 64.2% and females at 28.0%. This means most young rural women are not in the labour force, often due to education, domestic responsibilities, safety concerns, or few local jobs. For young men, cities offer better opportunities in sectors like construction and services, while rural jobs are mostly seasonal and informal. Overall, the low youth LFPR indicates many are still studying or training, highlighting the need for easier school-to-work transitions and more local non-farm jobs in rural areas.

Table 21 LFPR (15-59 years), usual status (ps+ss), Maharashtra (%)

	Rural	Urban	Rural + Urban
Male	81.5	83.1	82.2
Female	53.6	32.7	44.4
Person	68.0	58.9	63.9

Among prime working ages (15-59) in Maharashtra, rural labour force participation rate (LFPR) is higher (68.0%) than urban (58.9%). Male participation is high across both areas (around 82%), but female LFPR shows a stark gap: 53.6% in rural areas versus 32.7% in urban. In villages, women mostly engage in self-employment or unpaid family work, while in cities, paid jobs are less accessible due to skill gaps, childcare, commuting, and social norms. A high rural female LFPR often means low-paid, family-based work, not necessarily better job quality. Policies should focus on improving job productivity and earnings, not just participation rates.

Table 22 WPR (15-29 years), usual status (ps+ss), Maharashtra (%)

	Rural	Urban	Rural + Urban
Male	51.7	56.0	53.6
Female	23.5	24.9	24.1
Person	38.8	41.7	40.1

The youth worker population ratio (WPR) in Maharashtra stands at 40.1% overall, with 38.8% in rural areas and 41.7% in urban areas. The gender gap is significant: in rural areas, 51.7% of young men work compared to only 23.5% of young women; in urban areas, it is 56.0% versus 24.9%. This highlights that many young women are either studying or not in paid employment. A rural WPR below 40% indicates limited and irregular youth job opportunities, with many shifting between short-term work and inactivity. Strengthening public works, job placement programmes, and skill development—especially in sectors like construction, repair, agri-logistics, and rural retail—can help convert youth labour force participation into actual employment.

Table 23 WPR (15-59 years), usual status (ps+ss), Maharashtra (%)

	Rural	Urban	Rural + Urban
Male	79.0	78.9	78.9
Female	52.9	30.6	43.1
Person	66.3	55.7	61.6

In prime working ages, 66.3% of rural residents are employed by usual status, compared to 55.7% in cities. Rural women's work participation rate (52.9%) is much higher than urban women's (30.6%) due to the inclusion of farm, livestock, and home-based work. However, these roles often offer lower productivity and earnings than urban or male-dominated jobs. While rural Maharashtra engages more women in work, increasing incomes requires shifting towards higher-productivity activities, better market access, improved tools, group enterprises, and moving women from unpaid family work to paid, skill-based roles. For men, with work participation around 79% in both areas, the challenge is improving job quality and stability, linked to the region's economic structure.

Table 24 Rural male, female and person LFPR (15+), by highest education (%)

Highest education	Not literate	510	Middle	Secondary	Higher secondary	Diploma / certificate	Graduate	6070	Secondary& above	All
Rural male LFPR (15+), by highest education (%)										
Maharashtra	77.6	84.9	78.2	68.6	73.9	78.5	88.7	90.4	75.6	77.8
All-India	79.1	89.1	82.2	70.1	70.2	90.8	88.7	92.7	75.6	80.2
Rural female LFPR (15+), by highest education (%)										
Maharashtra	50.0	59.4	51.1	40.7	35.6	34.5	39.6	53.6	38.7	48.0
All-India	54.7	56.8	43.6	34.8	30.6	59.8	40.7	58.4	35.8	47.6
Rural persons (male+female) LFPR (15+), by highest education (%)										
Maharashtra	58.0	71.3	65.5	56.3	57.9	69.5	72.1	78.3	60.7	63.0
All-India	63.0	73.1	64.8	54.7	52.8	83.0	69.6	78.1	58.8	63.7

Rural men in Maharashtra show strong labour-force participation (LFPR), with nearly 78% overall. LFPR drops in the secondary grades (68.6%) as many continue their education, then rises again at higher secondary and graduate levels. Almost all graduates and post-graduates are either working or seeking jobs, but the 15.5% unemployment rate among male graduates suggests job search pressure and mismatch rather than labour force withdrawal. For rural women, LFPR displays a U-shaped pattern with education. Participation declines from middle to higher secondary due to care and schooling, then increases for graduates and post-graduates (53.6%), indicating re-entry into professional roles. However, LFPR is very low for diploma holders (34.5%), with high unemployment (35%), pointing to barriers like mobility, safety, and limited local job opportunities.

Overall, rural LFPR in Maharashtra is highest among those with low education and graduates, with a dip at the secondary level. Compared to the national average, Maharashtra's LFPR is similar but notably lower for diploma holders, especially women, indicating weak links between diploma courses and rural employment.

Table 25 Rural male, female and person WPR (15+), by highest education (%)

Highest education	Not literate	510	Middle	Secondary	Higher secondary	Diploma / certificate	Graduate	6070	Secondary& above	All
Rural male WPR (15+), by highest education (%)										
Maharashtra	77.6	84.8	77.4	68.1	71.8	76.2	74.9	85.9	71.7	75.7
All-India	78.8	88.5	80.8	68.8	67.3	83.1	77.9	85.2	71.4	78.1
Rural female WPR (15+), by highest education (%)										
Maharashtra	50.0	59.4	51.1	40.7	35.4	22.4	32.2	47.3	37.1	47.4
All-India	54.7	56.7	43.3	34.3	29.4	50.3	31.5	39.8	32.6	46.5
Rural persons (male+female) LFPR (15+), by highest education (%)										
Maharashtra	58.0	71.3	65.1	56.0	56.6	65.2	60.5	73.1	57.8	61.6
All-India	62.8	72.8	63.9	53.8	50.6	74.9	59.5	65.9	54.9	62.1

Rural men's Worker Population Ratio (WPR) tracks Labour Force Participation Rate (LFPR) closely until higher education levels. At graduation, a stark gap emerges (LFPR 88.7% vs. WPR 74.9%), signaling open unemployment; post-graduates recover (WPR 85.9%), as advanced credentials boost absorption into teaching, health, government, or organized services. Below secondary, high WPR reflects near-full engagement in family farming, petty trade, and casual labor. For rural women, WPR plummets at diploma level (22.4% vs. LFPR 34.5%), exposing acute unemployment and weak vocational job linkages near villages. Graduates partially rebound (WPR 32.2%; 47.3% for post-graduates), but rates lag far behind men's, revealing the sharpest bottleneck in Maharashtra's rural education-to-work pipeline. Bridging it demands last-mile placements, safe transport, childcare, and procurement/credit favoring women-led enterprises.

Overall, WPR peaks at education extremes—low (family/casual roles) and post-graduate (strong attachment)—but dips at secondary (study effects) and stalls at graduate (60.5%, due to degree-holder unemployment). Versus all-India averages, Maharashtra's rural diploma WPR underperforms (65.2% vs. 74.9%), while post-graduate excels (73.1% vs. 65.9%), indicating a market that rewards elite credentials but neglects mid-level vocational ones. Key interventions: align diploma/degree programs with local demand via structured MSME apprenticeships, agri-value chains, district services, and multi-skilling (e.g., repair, healthcare support, digital services); add women-targeted placement, transport, and hostels to convert education into proximate earnings.

2.3.2 Employment Status

Table 26 Rural males, female & person-Status in employment, usual status (ps+ss), Maharashtra (%)

Status	Own-account worker & employer	Helper in household enterprise	All Self-Employed	Regular Wage-Salary	Casual Labour	All
Rural males Status in employment, usual status (ps+ss), Maharashtra (%)						
Maharashtra	43.8	9.8	53.5	20.1	26.4	100.0
All-India	47.0	12.4	59.4	15.8	24.9	100.0
Rural females Status in employment, usual status (ps+ss), Maharashtra (%)						
Maharashtra	16.8	40.8	57.6	9.6	32.8	100.0
All-India	31.2	42.3	73.5	7.8	18.7	100.0
Rural persons (male + female) Status in employment, usual status (ps+ss), Maharashtra (%)						
Maharashtra	33.4	21.7	55.1	16.0	28.9	100.0
All-India	41.0	23.7	64.7	12.7	22.5	100.0

Rural Men's Employment in Maharashtra

A majority of rural men (53.5%) are self-employed, but they rely less on it than the all-India average, favouring regular wage work (20.1% vs. 15.8%)—evidence of robust non-farm markets in key districts. Casual labor remains significant (26.4%), exposing workers to seasonal volatility. Within self-employment, own-account/employer roles dominate (43.8% vs. unpaid helpers at 9.8%), signalling potential from micro-enterprise upgrades like market access, credit, and tools.

Rural Women's Employment

Women's work splits between self-employment (57.6%, led by unpaid family helpers at 40.8%) and high casual labor (32.8%). Stark contrasts with all-India: lower own-account activity (16.8% vs. 31.2%), indicating few market-facing women-led enterprises, and elevated casual work (32.8% vs. 18.7%), which is low-paid and intermittent. Regular salaried jobs are rare (9.6%), underscoring needs for enterprise bundles (inputs, credit, SHG/FPO procurement) and pathways to stable roles via skills, childcare, and safe transport—while elevating casual work productivity.

Overall Patterns and Strategy

Rural Maharashtra features fewer self-employed (55.1%) and more regular wage earners (16.0%) than national averages, reflecting non-farm momentum, but burdened by higher casual labor (28.9%). Self-employment tilts toward own-account (33.4%) over unpaid helping (21.7%), though women's helper roles dilute this. Prioritize: (1) upgrading self-employment with inputs, credit, aggregation, and digital sales; (2) expanding regular wages through MSME clusters, agro-processing, and public services; (3) de-risking casual labor via demand smoothing (e.g., timed public works), fair wages, and seasonal safety nets.

2.3.3. Unemployment Status

Table 27 Unemployment Rate (UR, %) by usual status (ps+ss), age 15-29 years

	Rural	Urban	Rural + Urban
Male	10.1	12.8	11.4
Female	7.5	11.1	9.2
Person	9.4	12.4	10.8

Youth Unemployment (Ages 15-29)Youth unemployment in Maharashtra tilts urban (12.4% vs. rural 9.4%), yet rural rates (men 10.1%; women 7.5%) signal household risks amid school-to-work transitions. Paired with low rural LFPR/WPR, this reveals queuing for urban services/manufacturing jobs, while villages provide only seasonal/casual absorption. Priorities: local MSME apprenticeships, tehsil shopfloor pipelines, and lean-season MGNREGS to curb distress migration.

Table 28 Unemployment Rate (UR, %) by usual status (ps+ss), age 15-59 years

	Rural	Urban	Rural + Urban
Male	3.2	5.1	4.0
Female	1.3	6.3	2.9
Person	2.4	5.4	3.6

Prime-Age Unemployment (Ages 15-59)Rural UR remains low (2.4% overall; men 3.2%, women 1.3%) versus urban (5.4%; men 5.1%, women 6.3%). Caveats: (1) PLFS masks underemployment in unpaid/family roles; (2) urban female spikes highlight barriers (skills mismatch, childcare, safety). Focus: shift labor to productive non-farm roles (services, agro-processing, repair) via FPOs, value chains, and mechanization; add crèches/transport for women.

Table 29 Maharashtra (rural) education-specific unemployment rates from PLFS 2023-24 percent of persons 15+ by usual status (ps+ss). Rural males (UR, %),
Rural Females (UR, %), Rural Person (UR, %),

Highest education	Not literate	Literate & up to primary	Middle	Secondar	Higher secondar	Diploma / certificate	Graduate	Post-graduate & above	Secondary& above	All
Maharashtra (rural) education-specific unemployment rates from PLFS 2023-24 percent of persons 15+ by usual status (ps+ss). Rural males (UR, %)										
Maharashtra	0.0	0.0	1.0	0.7	2.9	2.9	15.5	5.1	5.1	2.8
All-India	0.3	0.6	1.6	1.8	4.1	8.5	12.1	8.2	5.6	2.7
Maharashtra (rural) education-specific unemployment rates from PLFS 202324 percent of persons 15+ by usual status (ps+ss). Rural Females (UR, %)										
Maharashtra	0.0	0.0	0.1	0.0	0.6	35.0	18.7	11.7	4.0	1.1
All-India	0.1	0.1	0.8	1.3	3.8	15.8	22.7	31.9	9.0	2.1
Maharashtra (rural) education-specific unemployment rates from PLFS 202324 percent of persons 15+ by usual status (ps+ss). Rural Person (UR, %)										
Maharashtra	0.0	0.0	0.7	0.5	2.3	6.2	16.1	6.6	4.8	2.1
All-India	0.2	0.4	1.4	1.7	4.0	9.8	14.6	15.7	6.5	2.5

Rural UR traces a U-shape: near-zero below secondary (low-skill absorption into farming/enterprise), modest rises at higher secondary/diploma, peaking at graduates (16.1% vs. all-India 14.6%). Maharashtra outperforms nationally on diplomas (6.2% vs. 9.8%) but lags on graduates; women face extreme diploma UR (35%). Drivers: low-end hides underemployment; graduate peak signals mismatch/thin rural demand. Target: (1) degree/diploma bridges to MSMEs, agri-services, health/IT (apprenticeships, job fairs); (2) women-focused skilling + creches/transport/procurement; (3) hybrid platforms at panchayat hubs to convert education into local, remunerative work, reducing the current reliance on unpaid family work or wait times for scarce government posts.

2.3.4. Employment by Sector and Status

Table 30 Employment in Percentage under different Industry section in Rural Maharashtra

	Rural Male%		Rural Female%		Rural Person%	
Industry section	Maharashtra	All-India	Maharashtra	All-India	Maharashtra	All-India
Agriculture, forestry & fishing	58.89	49.43	81.50	76.89	67.55	59.84
Mining & quarrying	0.40	0.30	0.00	0.04	0.25	0.20
Manufacturing	9.44	8.10	5.12	8.53	7.79	8.26
Electricity, gas, steam & AC	0.32	0.29	0.00	0.02	0.19	0.19
Water supply, sewerage, waste	0.16	0.21	0.49	0.11	0.29	0.17
Construction	8.79	17.72	1.14	3.89	5.86	12.48
Trade; repair of vehicles	8.02	9.31	4.26	3.22	6.58	7.00
Transport & storage	5.01	5.53	0.07	0.04	3.12	3.45
Accommodation & food services	1.25	1.60	0.74	0.68	1.06	1.25
Information & communication	0.38	0.40	0.14	0.10	0.29	0.29
Financial & insurance	0.70	0.64	0.43	0.25	0.60	0.49
Real estate	0.01	0.08	0.00	0.02	0.00	0.06
Professional, scientific, technical	0.32	0.30	0.00	0.06	0.20	0.21
Admin & support services	1.16	0.73	0.31	0.17	0.83	0.52
Public administration & defence	0.72	1.04	0.71	0.54	0.72	0.85
Education	1.36	1.80	2.19	2.72	1.68	2.15
Human health & social work	0.97	0.55	1.03	1.40	0.99	0.87
Arts, entertainment & recreation	0.38	0.16	0.07	0.04	0.27	0.11
Other services	1.21	1.53	0.61	0.53	0.98	1.15
Households as employers / own-use	0.52	0.29	1.17	0.75	0.77	0.47
All	100.00	100.00	100.00	100.00	100.00	100.00

Rural Employment by Sector (Maharashtra vs. All-India): Maharashtra's rural workforce is more agriculture-dominant (68% overall vs. 60% nationally): men at 59% (vs. 49%), women at 82% (vs. 77%). Construction plays a muted role (5.9% vs. 12.5%; men 8.8% vs. 17.7%), signaling lower reliance on cyclical booms and reduced lean-season buffers, with heavier dependence on farm/trade/services. Manufacturing edges higher for men (9.4% vs. 8.1%) but lags for women (5.1% vs. 8.5%), missing women-led processing opportunities. Services remain thin: trade (6.6%), transport (3.1%), hospitality (1.1%), others (finance/education/health/admin <6%).

Gender Patterns and Implications: First, women's work is overwhelmingly in agriculture with very small own-account non-farm footprints, so moving women from unpaid helper roles to market-linked SHG/FPO enterprises, food processing, tailoring/repair, retail, and care services could meaningfully raise household earnings. Second, men's employment shows pockets of formalising services admin support (N), health (Q), arts/recreation (R), households as employers (T) that are all above national shares but still tiny; scaling these requires district-town market development, logistics, and reliable demand.

Strategic Pathways: Less construction-led and more farm-anchored, the durable path to better livelihoods is: raise on-farm productivity and value realisation, expand village-adjacent MSME manufacturing (especially women-friendly lines), and deepen trade/logistics and hospitality around growth corridors and tourist belts with targeted skilling and credit to pull women into.

Table 31 Comparing and Contrasting Maharashtra and India

Quick metric (rural)	Maharashtra	All-India	Why it matters
Agri : Construction (persons)	11.5× (67.55 / 5.86)	4.8× (59.84 / 12.48)	Maharashtra relies far more on farm than construction for jobs.
Non-farm share (male)	41.1	50.6	Fewer non-farm options for men vs India.
Non-farm share (female)	18.5	23.1	Very limited non-farm space for women.
Gender gap in non-farm share	22.6 pp	27.5 pp	Scale of the rural diversification challenge for women.
Manufacturing + Construction (persons)	13.65 (7.79+5.86)	20.74	Smaller industrial base in villages vs India.
Market-facing services G+H+I (persons)	10.76 (trade + transport + hospitality)	11.70	Scope to deepen rural commerce/logistics/tourism.
Public services O+P+Q (persons)	3.39	3.87	Limited education/health/admin jobs locally.
Female manufacturing share	5.12	8.53	~3.4 pp gap prime space for women-friendly light industry.

Exemplar — Near-Work & Doorstep Services: Post-COVID Micro-Enterprise Response

Section	Details
Setting	District: Beed — families reside in villages but commute to taluka/district hubs; door-to-door repair/services spread post-COVID.
Challenge	Rainfall swings (normal ~699 mm; actual recently ~609–1,199 mm) and low assured irrigation push income volatility; social costs of migration (child marriage risks, extreme health decisions in cane-cutting households) add pressure.
What was observed	Rise in petty trade and mobile repair services (fridge/mixer/gas/mobile/electrical) reduces dependence on weekly bazaars. Trend aligns with 10 MSME clusters, 22,273 Udyog registrations, and strong MUDRA flows—converting skills into village-anchored earnings.
Enablers	Micro-loans for tools/working capital; improved roads (RIDF) lowering service radius time; local demand for doorstep convenience; NGO facilitation on pricing and record-keeping.
Replicable levers	Skill + starter-kit bundles (tool banks, spares float); fast-track Udyam + GST-light compliance help; micro-POS/UPI on boarding; block-level service directories to match demand and reduce client acquisition costs.

Exemplar — Ambeghar (Patan): Near-Work Micro-Enterprise after Landslide

Section	Details
Setting	District: Satara • Block/Village: Patan, Ambeghar (landslide-affected). Household portfolio: livestock + sewing (machine support).
Challenge	Local demand is thin due to migration; customers concentrate in larger towns, so village-based enterprises struggle to scale without commuting.
What was observed	Families stay in the village but commute for customers; sewing skills need market access and trend updates; livestock evens cash but input timing matters.
Enablers	Asset support (sewing machine), road connectivity, SHG/coop platforms, and seasonal livestock income as a floor.
Replicable levers	Market linkage days in nearby towns; short courses on design/trends + bulk sourcing; shuttle credit for weekly commutes; bundled livestock health/insurance camps timed to lean months.

Exemplar — Shahada–Navapur: Migration Ladder Meets Women's Credit Rails

Section	Details
Setting	District: Nandurbar • Blocks: Shahada, Navapur • Scale: 930 villages (886 with paved approach roads; 943 electrified).
Challenge	Single-season farming and patchy irrigation push 4–6 months of structured migration (Surat/Gujarat for semi-skilled work; western Maharashtra for farm labour). Only 6 mandis; thin branch coverage; documentation gaps (7/12 division, Aadhaar/PAN) exclude many from subsidy/credit.
What was observed	Bank access improving via PMJDY and SHGs (all-women blocks; 4,200 credit-linked in FY24). Local uptake in tailoring, small livestock, and tool-based repair services—often SHG-enabled. Paved roads/electrification noticeably cut transaction time/costs.
Enablers	SHG and gram-sangh federations for credit and orders; PMJDY accounts; village connectivity; bilingual outreach by teachers/CSOs.
Replicable levers	Mobile documentation camps (7/12, Aadhaar/PAN) at SHG meets; migration-calendar KCC disbursals; SHG-run service desks for entitlements/insurance; basic UPI on boarding; job-match tie-ups for seasonal returnees.

2.3.5 Status of the Incorporated Sector

Rural Maharashtra has a vast base of own-account enterprises (OAE) and a smaller but critical layer of hiring-worker establishments (HWE). Across the three major non-agricultural activities—manufacturing, trade, and other services—the state hosts 2.60 million rural establishments, comprising 2.36 million OAE and 0.24 million HWE. Thus, 90.6 percent operate as family-run own-account units, while the remaining 9.4 percent hire labour. Within OAE, other services account for 37.7 percent of units, followed by trade (32.5%) and manufacturing (29.8%). Among HWE, the distribution tilts more toward services, with other services (43.3%) and trade (36.0%), while manufacturing forms 20.7 percent. Multi-activity behaviour is limited but discernible: 3.9 percent of OAE and 5.8 percent of HWE report mixed activities, translating to around 1.06 lakh establishments in total. The structure is intuitive—OAE are numerous, small, and typically specialised, whereas HWE units are fewer, larger, and slightly more diversified.

At the national scale, Maharashtra is over-represented in the HWE segment (8.8% of India's rural HWE versus 6.4% of rural OAE), underscoring a deeper base of service and trade outlets and stronger potential for manufacturing upgrades. Programmatically, this dual structure warrants a two-track strategy: - For OAE: facilitate micro-upgrading through equipment, quality enhancement, and market linkages to enable transitions toward employing workers. - For HWE: promote process professionalisation and service diversification, leveraging their higher incidence of mixed-activity operations for revenue stability and growth.

Table 32 Rural Maharashtra establishments by activity and type, with mixed-activity incidence

Broad activity	Type	Estimated establishments	Share within type %	Mixed-activity %	Approx. mixed establishments
Manufacturing	OAE	703,025	29.8	3.37	23,692
Manufacturing	HWE	50,715	20.7	6.69	3,393
Trade	OAE	765,859	32.5	4.55	34,847
Trade	HWE	88,033	36.0	6.83	6,013
Other services	OAE	890,452	37.7	3.74	33,303
Other services	HWE	106,088	43.3	4.61	4,891
Totals	OAE	2,359,336	100.0	3.89	91,841
	HWE	244,836	100.0	5.84	14,296
	All	2,604,172		4.08	1,06,138

Rural Maharashtra, overall workforce in unincorporated non-agricultural establishments

Table 33 Rural workers by type, counts

Geography	Working owners	Formal hired	Informal hired	Unpaid family	Other	Total
Maharashtra	2,426,958	11,212	713,399	796,864	13,741	3,962,173
All-India	37,537,946	659,087	8,440,966	9,238,032	262,380	56,138,411

The ASUSE 2023–24[11] survey estimates 3.96 million workers engaged in rural Maharashtra's unincorporated non-agricultural economy, contributing to 10.1 percent of India's total of 56.14 million such workers. The workforce is dominated by working owners (61.3%), with unpaid family workers (20.1%) and informal hired labour (18.0%) providing essential support. Formal employment is a thin layer at just 0.3 percent. Relative to the national rural average, Maharashtra has fewer working owners and a higher share of unpaid family labour, reflecting a more collective household-based enterprise base. The state also shows greater use of informal hires, while formalization remains limited. Women constitute 29 percent of all rural workers, slightly below the national 30.8 percent. Within categories, women represent 27.1 percent of working owners, 23.4 percent of informal hires, and 40.1 percent of unpaid family workers, highlighting the feminisation of unpaid and informal segments.

Table 34 Composition of rural workers, percent of total

Geography	Working owners	Formal hired	Informal hired	Unpaid family	Other
Maharashtra	61.3	0.3	18.0	20.1	0.3
All-India	66.9	1.2	15.0	16.5	0.5

Table 35 Maharashtra, rural manufacturing HWE: worker composition and gender

Worker type	Male	Female	All	Share of total %	Female within type %
Working owners	48,364	3,548	51,912	16.6	6.8
Formal hired	2,379	742	3,121	1.0	23.8
Informal hired	160,323	73,735	234,059	75.0	31.5
Unpaid family	17,774	5,282	23,056	7.4	22.9
Other workers	0	0	0	0.0	
Total	228,840	83,307	312,149	100.0	26.7 overall

Maharashtra's rural manufacturing HWE are heavily dependent on informal labour yet show greater female participation than the national average. Out of every 100 workers in these units: 75 are informal hired workers, 17 are working owners, 7 are unpaid family workers, and 1 is formally hired. Women form 26.7 percent of the total workforce—well above the all-India level of 18.4 percent—with participation strongest among informal hires (31.5%). The overwhelming informality—98.7 percent of hired workers—is comparable to the national pattern (99.3%).

Compared to India overall, Maharashtra relies slightly less on working owners, engages somewhat more unpaid family labour, and includes more women workers. Programmatically, this points to three priorities:

1. Enhance job quality in the informal segment through safety, work-hour regularity, and digital payrolls.

[11] *https://www.mospi.gov.in/sites/default/files/publication_reports/ASUSE_2023_24_Full_Report-L.pdf*

2. Strengthen career progression for women, offering supervisory and co-ownership pathways within small manufacturing units.
3. Promote partial formalization to anchor training, productivity improvements, and enterprise resilience.

Table 36 at a glance, Maharashtra vs all-India, rural manufacturing HWE

Share of total workers %	Maharashtra	All-India
Working owners	16.6	19.2
Formal hired	1.0	0.5
Informal hired	75.0	74.1
Unpaid family	7.4	6.0
Other workers	0.0	0.2
Female, overall	26.7	18.4

Rural trade in Maharashtra

Rural trade in Maharashtra reveals two contrasting labour systems - Hiring-worker establishments (HWE) that depend on hired staff under owner supervision; and Own-account enterprises (OAE) that rely heavily on unpaid family labour. Women's participation varies sharply: in HWE, they make up 9.8 percent of the workforce (vs. 8.1% nationally); in OAE, 25.6 percent (vs. 25.2% nationally), though mostly as unpaid family workers. Combined, rural trade employs a workforce that is 59.5 percent working owners, 28.7 percent unpaid family labour, and 11.4 percent informal hires, with women forming 22.5 percent overall. This confirms the dominance of household-based enterprises with limited hiring.

Table 37 Rural trade, HWE workforce shares, and percent of total workers

Share of total workers %	Maharashtra share	All-India share	Female within type Maharashtra	Female within type All-India
Working owners	30.39	31.26	8.91	5.17
Formal hired	1.00	1.16	21.73	12.35
Informal hired	57.61	59.37	8.69	8.77
Unpaid family	10.72	7.07	17.76	16.14
Other workers	0.28	1.14	0.00	1.22
Female, overall	9.84	8.12		

Table 38 Rural trade, OAE workforce shares, and percent of total workers

Share of total workers %	Maharashtra share	All-India share	Female within type Maharashtra	Female within type All-India
Working owners	66.77	70.10	15.76	15.84
Formal hired	0.00	0.00		
Informal hired	0.00	0.00		
Unpaid family	33.14	29.83	45.46	47.31
Other workers	0.09	0.07	0.00	11.39
Female, overall	25.59	25.22		

Maharashtra's rural trade shows a clear jobs ladder but also a quality gap. Hiring-worker establishments rely on informal hires for nearly six in ten positions, so raising job quality through basic safety norms, predictable hours, and digitised payrolls can lift earnings and stability without expanding headcount. Own-account trade remains propped up by family labour, with about one in three workers unpaid; short training and light formalisation can convert part of this pool into paid roles and increase household cash incomes. Women are present but segmented: in HWE they appear largely as unpaid family and a smaller share of informal hires, while in OAE they are concentrated in unpaid family work. Creating pathways into paid, higher-skill functions such as cashiering, inventory control, and ecommerce support will shift this pattern. In aggregate, combining HWE and OAE in rural trade, 59.5 percent of workers are working owners, 28.7 percent are unpaid family, and 11.4 percent are informal hires, with women forming 22.5 percent of the total. This confirms a predominantly household-enterprise base with only a modest hired segment, and it points to practical upgrades that improve incomes by changing roles rather than headcounts.

Rural other services in Maharashtra, workforce structure and gender

Table 39 Rural other services, HWE in Maharashtra, composition and gender

Share of total workers %	Share of total workers %	Female within type %
Working owners	22.5	8.7
Formal hired	1.1	51.9
Informal hired	66.8	25.0
Unpaid family	9.1	15.2
Other workers	0.5	0.1
Female, overall	20.6	

Rural Other Services: Structure and Gender: Rural “other services” in Maharashtra present a mixed structure: 35 percent of employment in HWE and 65 percent in OAE. Within HWE, 66.8 percent of workers are informal hires, 22.5 percent are working owners, 9.1 percent are unpaid family members, and only 1.1 percent are formally hired. Women comprise 20.6 percent of the HWE workforce, slightly below the national 23.6 percent, but they dominate the small formal subsegment (51.9% of formal hires). In OAE, 81.6 percent are working owners and 17.4 percent unpaid family workers, with women representing 15.6 percent overall. The female share of unpaid family labour (32.2%) underscores opportunities for their transition into paid service roles (e.g., salons, hospitality, repairs, home-based care). Across both types, Maharashtra's rural other services workforce is 60.8% working owners, 23.5% hired informal, and 14.5% unpaid family, closely mirroring the national structure.

Table 40 Rural other services, OAE in Maharashtra, composition and gender

Share of total workers %	Share of total workers %	Female within type %
Working owners	81.6	12.2
Formal hired	0.0	
Informal hired	0.0	
Unpaid family	17.4	32.2
Other workers	1.0	0.0
Female, overall	15.6	

Worker's productivity

Table 41 Maharashtra's footprint in India's unincorporated non-agricultural economy (ASUSE 2023-24)

Indicator	Maharashtra
Share of all workers in unincorporated establishments (India = 100)	10.1%
Share of national GVA from unincorporated establishments	12.10% (highest among states)
Leadership by sector	Top in urban GVA share (14.40%); UP leads rural (14.63%)
Fixed assets (owned) per establishment state with the highest among majors	₹6,73,145

Maharashtra contributes 12.1 percent of national GVA from unincorporated establishments while accounting for 10.1 percent of the workforce, implying above-average productivity. Fixed assets per establishment—₹6.73 lakh, the highest among major states—reinforce this productivity edge, reflecting better tooling, equipment, and digital infrastructure. Nationally, rural GVA per establishment rose to ₹1.61 lakh in 2023–24 (up 5%), and rural GVA per worker also grew faster than urban, hinting at convergence. Maharashtra's per-worker GVA outperforms the all-India average across most sectors, especially manufacturing: - Manufacturing OAE: ₹70,861 vs. ₹58,845 (+20.4%); - Manufacturing HWE: ₹2,09,537 vs. ₹1,66,097 (+26.2%); - Trade OAE: ₹1,07,233 (+11.2%); and - Other services OAE: ₹1,33,930 (+8.4%). The productivity gain from moving from OAE to HWE in manufacturing—nearly 3x higher value per worker—highlights the potential of enterprise scaling and capital deepening.

India wide, rural establishment internet use rose from 13.5 percent to 17.9 percent between 2022-23 and 2023-24, lowering transaction costs and improving market access. These trends are actionable for Maharashtra's rural clusters through digital commerce, B2B sourcing and participation in service platforms.

Table 42 Rural productivity from ASUSE (all-India benchmarks reference)

Metric (current prices)	Rural	Urban	All-India
GVA per establishment (₹/yr) 2023-24	1,60,658	3,46,081	2,45,687
Growth vs 2022-23	+4.99%	+1.40%	+3.16%
GVA per worker (₹/yr) 2023-24	(rural higher growth than urban; absolute still lower)		1,49,742 (all establishments)

Rural Productivity Surge (ASUSE 2023-24): Rural Maharashtra outpaced urban growth in GVA per establishment and per worker, signaling catch-up earning potential despite lower urban baselines. This positions non-farm activity as a seasonal stabilizer and exit ramp from low-return farming, amplified by the state's outsized GVA share. Maharashtra leads major states with highest owned fixed assets per establishment (₹6.73 lakh), enabling OAEs to transform family labor into marketable output (e.g., processing, repair, transport). Rising registration and internet use (India-wide rural: 13.5% to 17.9%) cuts transaction costs—leverage via digital commerce, B2B platforms, and service marketplaces in rural clusters. Maharashtra exceeds all-India averages across OAEs/HWEs, with widest margins in manufacturing—reinforcing non-farm as high-potential anchor for district strategies. Rural manufacturing sees women as majority workers (55.1% vs. urban 37.1%), powering home-based value addition (apparel, food, handicrafts) and services (tailoring, care). Key levers: (1) small-ticket capital grants/credit for assets (tools, machines); (2) market linkages + digital onboarding to sustain productivity gains.

Table 43 All India Borad Activity

Broad activity	Type	Maharashtra	All-India	Maharashtra vs all-India
Manufacturing	OAE	70,861	58,845	+20.4%
	HWE	209,537	166,097	+26.2%
	All	107,417	81,642	+31.6%
Trade	OAE	107,233	96,397	+11.2%
	HWE	193,679	200,324	−3.3%
	All	124,395	111,733	+11.3%
Other services	OAE	133,930	123,518	+8.4%
	HWE	170,135	192,240	−11.5%
	All	146,646	143,597	+2.1%
All activities	OAE	104,270	93,469	+11.6%
	HWE	187,981	186,061	+1.0%
	All	126,834	113,917	+11.3%

Maharashtra's rural enterprises outperform national averages, especially OAEs. Manufacturing shows the sharpest scale gains (OAE-to-HWE: 2.96x), driven by equipment and specialization—highest-impact upgrade path. Trade/services OAEs lead nationally but HWEs lag, signaling needs for inventory, credit, standardization, and branding. The pattern implies that upgrading rural manufacturing firms from own account to hiring worker status is the highest impact lever, while scaled trade and service firms need process improvements to unlock their productivity gap.

2.3.6 Status of Agricultural Labour

Table 44 Agricultural labour in Maharashtra Source: Economic survey of Maharashtra 2023-24

Agricultural labourers, total (male; female)	1.35 crore (67.75 lakh; 67.11 lakh)	Census 2011	Main + marginal workers.
Agricultural labourers main (male; female)	1.11 crore (58.47 lakh; 52.22 lakh)	Census 2011	Regular/longer-duration work.
Agricultural labourers marginal (male; female)	24.17 lakh (9.28 lakh; 14.89 lakh)	Census 2011	Shorter-duration work.
CPI for Agricultural Labourers (CPI-AL), Maharashtra	1463.6 (YoY +7.9%)	Apr-Dec 2024	All-India CPI-AL 1295.3 (YoY +6.2%).
MGNREGA households provided employment	25.72 lakh	2024-25 (up to Jan)	47 days per HH on average; person-days 12.02 crore.
MGNREGA share of women in employment	44.3%	2024-25 (up to Jan)	SC 6.3%, ST 14.9%; cost/PD ₹384.
MGNREGA HHs with >100 days	2.59 lakh	2024-25 (up to Jan)	Wage bill for >100 days: ₹289.16 cr.

Maharashtra's agricultural labour force totals 1.35 crore workers per Census 2011, evenly split between 67.75 lakh males and 67.11 lakh females, with 1.11 crore classified as main workers and 24.17 lakh as marginal. This gender-balanced structure underscores the heavy reliance on casual farm labour in rural livelihoods. Recent wage pressures reflect a tightening market: the CPI for agricultural labourers (CPI-AL) averaged 1463.6 in Apr–Dec 2024, up 7.9% year-on-year, outpacing the all-India rise of 6.2% to 1295.3. MGNREGA serves as a key buffer, engaging 25.72 lakh households in 2024–25 (up to Jan) for 12.02 crore person-days at an average of 47 days per household. Women comprise 44.3% of

participants, with 2.59 lakh households exceeding 100 days and a wage bill of ₹289.16 crore for that tranche at ₹384 per person-day. These dynamics signal a predominantly informal labour market under strain, where public works mitigate seasonal gaps and support female inclusion. Nominal daily wages from 2019–22 show post-COVID acceleration: male field labour rose 20.5% to ₹398.85, female 14.8% to ₹258.70 (65% of male rates); "other agri" work saw male gains of 18.0% to ₹377.78 and female 12.0% to ₹243.75 (64.5% of male). The persistent gender gap—₹140 in field tasks, ₹134 in others—highlights task segmentation, with women in lower-paid roles. For district planning, track quarterly wage prints by operation and sex, and pair them with local MGNREGS rates and seasonal labour demand to spot compression or divergence in real earnings[12] .

Table 45 Rural Maharashtra: agricultural labour wages (AWI 2019-20 to 2021-22)

Category	Sex	2019-20	2020-21	2021-22	Δ 2-yr %	2021-22 female/male
Field labour	Male	331.09	314.78	398.85	+20.5	
	Female	225.32	231.33	258.70	+14.8	65.0%
Other agri. labour	Male	320.14	372.00	377.78	+18.0	
	Female	217.71	249.78	243.75	+12.0	64.5%

2.3.7 MGNREGA: Status

MGNREGA in Maharashtra, FY 2022-23 to 2024-25: Coverage, Employment Intensity, and Asset Creation

Table 46 Programme coverage and intensity, Maharashtra

Indicator	2022-23	2023-24	2024-25
Households provided employment (lakh)	21.21	24.46	25.72
… of which ≤100 days (lakh)	19.86	21.72	23.14
… of which >100 days (lakh)	1.35	2.75	2.59
Expenditure on >100 days (₹₹ crore)	241.57	497.03	289.16
Employment generated (crore person-days)	7.88	11.60	12.02
Average employment per household (days)	37	47	47
Share in employment (%) SC / ST / Women	8.0 / 20.1 / 44.7	6.9 / 17.4 / 43.9	6.3 / 14.9 / 44.3
Works completed (number)	3,54,508	3,37,779	3,67,457
Total expenditure (₹₹ crore)	3,024.40	4,462.33	4,613.37
Cost per person-day (₹)	384	385	384

2024-25 figures are up to January. Source: Economic Survey of Maharashtra 2024-25, Table 10.53.

MGNREGA coverage in Maharashtra expanded from 21.21 lakh households in 2022–23 to 25.72 lakh in 2024–25 (up to Jan), generating 12.02 crore person-days versus 7.88 crore initially. Average days per household stabilised at 47, with women at 44.3%, SC at 6.3%, and ST at 14.9%; total spend reached ₹4,613 crore at a steady ₹384 per person-day. Households exceeding 100 days rose to 2.59 lakh, though expenditure on this tranche dipped to ₹289 crore. Horticulture plantations under MGNREGA covered ~39,000 hectares annually (38,973 ha in 2023–24, 39,397 ha in 2024–25 up to Jan), with payments tied to plant survival across all 34 districts (max 2 ha per job-card holder). This embeds durable assets like orchards into wage support, fostering income diversification. Works

[12] *https://desagri.gov.in/wp-content/uploads/2025/07/AWI-2023-24-for-printing-uploading-1.pdf*

remain irrigation-dominant: irrigation for SC/ST, IAY, and small/marginal farmers led with 3.08–3.32 lakh completions yearly and ₹58,000–₹102,000 lakh spend. Rural connectivity (4,565–6,714 works) and water conservation (3,864–4,201) provide public goods, while drought-proofing surged (14,665–17,518 works) with lower per-work costs, shifting toward soil-moisture and tree-based interventions.

Table 47 Horticulture plantation under MGNREGA, Maharashtra

Measure	2023-24	2024-25
Area planted (hectares)	38,973.28	39,397

2024-25 figures are up to January Notes: Implemented since 2011-12 across 34 districts; benefit limited to up to 2 ha per job-card farmer; subsidy disbursed to the farmer's bank account proportional to plant survival. Source: Economic Survey of Maharashtra 2024-25

Table 48 Category-wise works completed and expenditure, MGNREGA (selected heads)

Category of work	2023-24 Works	2023-24 Expenditure (₹ lakh)	2024-25 Works	2024-25 Expenditure (₹ lakh)
Rural connectivity	4,565	48,050.63	6,714	30,811.35
Flood control and protection	720	3,082.88	987	2,859.79
Water conservation and water harvesting	3,864	18,938.92	4,201	8,215.35
Drought proofing	14,665	6,186.30	17,518	840.39
Micro and small irrigation works	171	532.44	240	767.26
Irrigation facility to SC/ST, IAY, small and marginal farmers	3,07,755	1,01,914.88	3,31,538	58,032.56
Renovation of traditional water bodies	955	5,580.90	1,186	3,250.98
Land / agricultural development	1,084	1,907.50	1,287	1,320.55
Rajiv Gandhi / Bharat Nirman Seva Kendra	7	4.35	7	0.00
Other works	3,993	3,206.09	3,779	1,590.84

2024-25 figures are up to January. Source: Economic Survey of Maharashtra 2024-25, Annexure 10.15.

Exemplar: MGNREGA–CFR Convergence: Commons Repaired, Lean Months Covered

Section	Details
Setting	District: Gadchiroli • Block: Kurchi (and other CFR villages).
Challenge	Lean-season cash gaps (Dec–Feb); silted ponds and weak local storage reduce second-season options and raise risk for forest-edge hamlets.
What was observed	MGNREGA works—plantations, pond desilting, contour trenches, nursery tasks align with the agri calendar and directly serve CFR landscapes; the same youth cohorts mobilise for NTFP grading and commons works; incomes stabilise while ecological base improves.
Enablers	Joint planning on GS noticeboards; asset choices that support both irrigation and NTFP; predictable muster rolls in dry months; overlap of volunteers across CFR and MGNREGA.
Replicable levers	Annual GS–MGNREGA plan for soil–water; priority to CFR villages; nursery procurement linked to pits created; simple wage-to-asset dashboards for transparency.

2.3.8 Rural Infrastructure for Livelihoods

Rural livelihoods depend critically on infrastructure that facilitates input flows, perishable transport, mobility, payments, and public services. Maharashtra's 3.28-lakh-km road network interconnects farm clusters with mandis, dairies, chilling centres, and ports, minimising transit times and losses in perishable chains. NABARD's Rural Infrastructure Development Fund (RIDF) has financed 23,399 projects in irrigation, rural roads, bridges, water supply, and fisheries, with ₹22,945 crore sanctioned (₹17,852 crore disbursed), forging last-mile connectivity essential for smallholder viability.

Irrigation expansion draws from Long Term Irrigation Fund (LTIF) and Nagpur Irrigation Development Authority (NIDA), sanctioning ₹18,021 crore and ₹6,655 crore respectively (with high utilisation), complementing RIDF for a ₹35,112 crore total across 976 projects that stabilise rabi and horticulture revenues in water-scarce zones. Post-harvest infrastructure has scaled substantially: Mission for Integrated Development of Horticulture (MIDH) added 19,421 pack-houses/precooling/cold-storage/onion structures, 21,307 hectares of protected cultivation, and 28,470 community tanks/pond linings, mitigating losses, extending marketing periods, and buffering price volatility in onions, grapes, and bananas. The private cold-chain comprises 185 fruit storages (≈4.17 lakh MT), augmented by cooperative dairy chilling (36.57 lakh LPD) and processing (135.72 lakh LPD), alongside Public Distribution System (PDS) expansions of 902 godowns (7.23 lakh MT) and 321 new godowns (4.71 lakh MT), enhancing food security logistics and local employment. The Unconventional Energy Generation Policy (2020) bridges remote gaps via 91.2 kW microgrids, 22 solar cold storages, and solar electrification for 7,977 households, ensuring reliable irrigation, chilling, and digital access where grid supply falters; NABARD's AIF/FIDF/AHIDF, including FIDF tripartite arrangements, further seeds fishing harbours, landings, and cold chains for coastal/reservoir fishers.

Maharashtra's rural infrastructure narrative transcends mere road kilometres or megawatts, embodying integrated value chains that convert assets to incomes. RIDF-funded roads and bridges proximate inputs and extension to farms; LTIF/NIDA irrigation mitigates weather risks; MIDH pack-houses/storage empower small producers' bargaining; dairy chilling and PDS warehousing ensure offtake stability; decentralised renewables sustain cold chains and pumps at the last mile. Collectively, these investments elevate market access, even out seasonal cash flows, and fortify small/marginal producer resilience, who gain disproportionately from proximate logistics and storage.

Table 49 Key rural-infra indicators Source: Economic Survey of Maharashtra 2024-25; NABARD State Focus Report Maharashtra

Indicator	Maharashtra latest status
Road network maintained by NHAI, PWD & ZP	3.28 lakh km (Mar 2024)
RIDF support to rural infrastructure (cumulative)	₹22,945.34 cr sanctioned, ₹17,852.03 cr disbursed; 23,399 projects (to 31 Mar 2023)
LTIF (irrigation) to Maharashtra	₹18,021.31 cr sanctioned; ₹14,876.65 cr utilised (to 30 Nov 2023)
NIDA (irrigation BJSY)	₹6,655.00 cr sanctioned; ₹4,630.25 cr disbursed (to 31 Mar 2023)
Cumulative irrigation funding (RIDF+LTIF+NIDA)	₹35,112.47 cr; 976 major/medium/minor projects
Fisheries/animal husbandry infra funds (AIF/FIDF/AHIDF)	Tripartite MoA in place for fisheries infra under FIDF
Post-harvest infra under MIDH (since inception to Oct 2024)	19,421 pack houses/ripening/CS/PC units; ₹372.8 cr
Protected cultivation (MIDH)	21,307 ha; ₹440.88 cr
Community water assets (tanks/pond lining MIDH)	28,470 units; ₹557.29 cr

Indicator	Maharashtra latest status
Private cold storages (horticulture)	185 units; 4.17 lakh MT fruit capacity (to Jan 2025)
PDS godowns in State	902 godowns; 7.23 lakh MT capacity (Jun 2024)
New PDS godowns sanctioned	321 (4.71 lakh MT) 254 completed, 67 in progress
Dairy infra (co-op)	103 plants (135.72 lakh LPD); 122 chillers (36.57 lakh LPD)
Decentralised energy access (UEGP-2020)	91.2 kW microgrid capacity; 22 solar cold-storages; 7,977 HHs electrified

Deep Dive — Scarcity Tracts: Land Rights to Dryland Horticulture Pathway

Section	Details
Setting	District: Solapur • Belts: Akkalkot–Sangola–Mangalvedha–Karmala; Malshiras over-exploited groundwater; semi-critical tracts common.
Challenge	Every third year drought is lived memory; small/marginal holders (71% holders; 35% area) lack micro-irrigation, storage and buyer links. Historic watan lands need regularisation before investment.
What was observed	NGO supports land rights regularisation, then shifts households to dryland horticulture (pomegranate, mango, ber). District infra can serve the pathway (39 cold stores, 32 yards), but viability hinges on drip, pack-houses and contracts. Goat Banks and Cycle Banks ease cashflow/mobility.
Enablers that worked	Legal land clarity credit eligibility; horticulture clusters (banana/grape/pomegranate); yard/cold-store network; SHG/NRLM credit.
Replicable levers	One-stop “regularise-then-invest” cells; drip starter kits + AMC; block-level pack-house SLA with grade-linked prices; revolving goat units for lean-season cash.

Deep Dive — Satara: High Rain, One Crop vs. Dryland Horticulture

Section	Details
Setting	District: Satara • Wet west: Patan–Jawali–Wai–Koyna–Mahabaleshwar (3,000–4,000 mm rain) • Dry east: Man–Khatav–Phaltan.
Challenge	In the west, non-kharif water control is the choke point—single-crop rice dominates; in the east, diversification depends on drip + buyer links. Net irrigated area (~2.29 lakh ha) trails total sown area; five semi-critical blocks underline the constraint.
What was observed	Dryland horticulture (pomegranate, custard apple) surges where drip exists; bajra/jowar remain staples. Households keep rabi plans conservative unless storage or minor irrigation is assured.
Enablers that worked	Springshed/watershed works; drip in commandable pockets; existing market yards and cold stores; block-level exposure to grading/pack-house practices.
Replicable levers	Target springshed + minor irrigation to west uplands; drip starter kits in east; pack-house SLAs with grade-linked prices; micro-storage at village level to hold for better bids.

Deep Dive — Raigad: Corridors vs. Coast

Section	Details
Setting	District: Raigad • North: Navi Mumbai Airport–Mumbai–Goa Hwy–Virar–Alibaug Corridor (land from 100+ villages) • South/Coast: Shrivardhan and neighbouring blocks.
Challenge	Mega projects and land acquisition have shifted landholding patterns and job choices in the north; the south relies on rain-fed paddy, small orchards, and fisheries with limited irrigation and fragmented holdings. Rising wages (₹500–700/day in factories/farms) raise costs and pull youth to non-farm work.

Section	Details
What was observed	North: real estate and factory jobs dominate; asset sales to developers/second-home buyers (Karjat, Alibaug, Khopoli, Khalapur) accelerate. South: paddy in kharif; rabi fruits/vegetables where water allows; watermelon sold at farm-gate; mango/coconut/cashew pockets; small cashew sheds offer seasonal work (esp. Katkari households).
Enablers that worked	Where orchards link to storage + assured offtake, incomes steady; coastal households do better with working capital + nets/engines + landing/ice.
Replicable levers	Last-mile irrigation + on-plot storage to support a second season; cluster pack-houses/cold rooms for orchard belts; apprenticeship-backed skilling tied to corridor employers; simple compliance and revolving credit for SHGs/FPOs.

2.3.9 Markets and Price Formation

Rural incomes in Maharashtra are as profoundly influenced by markets and prices as by yields or weather patterns. Price dynamics dictate producer value capture, intermediary absorption via logistics, and erosion from living costs; this analysis synthesises consumer price evidence, public procurement, agricultural market structures, and frameworks for dissecting farm-gate-to-wholesale spreads, APMC versus direct purchases, e-NAM engagement, and input costs.

Rural Price Environment and Cost of Living

Consumer price indices (CPIs) document a pronounced escalation in rural living costs over five years, propelled by food/services and episodic spikes tied to seasons/supply disruptions. In the state series (2003=100), the rural all-commodities index advanced from 299 in 2019–2020 to 372 in 2023–2024 and 394 in 2024–2025 (April–December); food rose from 309 to 383 to 411. Fuel/power/light surged from 534 to 699 to 730. Monthly 2024 data reveal food-driven peaks in September–October (all-commodities year-on-year inflation near 9%), easing thereafter.

The National Statistical Office rural series (2012=100) corroborates: general index from 177.7 in 2022–2023 to 186.5 in 2023–2024 and 193.4 in 2024–2025; food/beverages hit 198.6. Fuel/light eased from 207.2 to 192.7, yet state series show steep cumulative fuel/power rises since 2019. Agricultural implications are direct: costlier diesel for irrigation/transport and electricity for pumping/handling, even amid cooling inflation. Lower-wage CPIs affirm the pressure—for agricultural labourers (state), general index climbed from 1,094 (2019–2020) to 1,373 (2023–2024) and 1,464 (2024–2025 April–December), food from 1,131 to 1,421 to 1,541; rural labourers mirror this. These trajectories erode real incomes for peak-season labourers and land-poor wage dependents when food/fuel/transport outpace farm prices, even in bountiful harvests.

Industrial worker indices at key centres illuminate rural spillovers: in 2024–2025 (April–December, 2016=100), Solapur neared 150, Nagpur 145, Nashik 138, Thane 134, with food components aligned. These hubs drive procurement/distribution corridors, transmitting pressures via transport/storage and trader capital cycles **Farm Price Discovery: Gate to Mandi to Retail** Cereal price discovery reflects modest public procurement amid dominant private trade. Decentralised minimum support price (MSP) operations via Maharashtra State Cooperative Marketing Federation (non-tribal) and Maharashtra State Cooperative Tribal Development Corporation (tribal) procured ≈5 lakh MT paddy/coarse grains from 1.5 lakh farmers up to December 2024–2025 (₹1,167 crore); 2023–2024 saw 11.5 lakh MT paddy and limited coarse grains. These volumes pale against output, leaving farm-gate prices to private buyers, arrivals, and storage balances. Public distribution stabilises consumer rather than producer prices, sustaining coarse cereal/rice demand in deficits via Aadhaar-enabled delivery, interstate/pan-state portability, and e-Point-of-Sale at >52,000 fair-price shops, curbing leakages. A 902-godown backbone (7.23 lakh MT capacity) plus expansions mitigates local scarcities, yet producer spreads—from gate to wholesale/retail—persist, driven by chain costs/margins.

Spreads originate in first-sale handling (bagging/weighing/loading/short-haul), mandi/collection fees/losses/deductions/advances, agent/trader coverage of capital/quality/transport risks, and cold-chain deficits amid gluts. Perishables like onions, tomatoes and green leafy vegetables suffer arrival congestion compressing gates despite high retail; cash crops like cotton/soybean reflect moisture/grade discounts and trader leverage via processing/exports.

APMCs anchor price discovery, but the trading mix is changing in ways that matter for farm-gate realisations. Direct purchase by processors, exporters and organised retailers has expanded in perishables and in cotton soybean corridors, compressing hand-offs and shortening payment cycles, although the realised spread still turns on who bears first-mile transport and grade-risk. Electronic rails add a third channel: e-NAM on boarding of mandis has widened and registrations now run into crores nationally, with digital assaying, remote bidding and straight-through payment designed to lower search and settlement costs; even though e-NAM trades are still a small share of total turnover in most commodities, the platform improves quote transparency and lets FPOs and small traders compare offers across centres and close deals against verified grades[13].

In cereals the State's decentralised MSP procurement sets a floor only at the margin about 5.07 lakh tonnes were purchased up to December 2024 so private bids and daily arrivals continue to set the operative farm-gate price in most markets. On the consumer side, Aadhaar-enabled PDS with more than fifty-two thousand ePoS devices and a statewide godown backbone stabilises retail availability, which tempers spikes but does not remove the farm-to-wholesale spread created by transport, working-capital and storage. Amid firm costs (2024 rural fuel/power/light ≈730 on 2003 base; agri-labour CPI 1,464 on 1986–87 base), channels curbing logistics/quality losses safeguard margins—tightest where FPOs source-aggregate, assay grades, leverage e-NAM/direct sales, and synchronise logistics for assured loading/transport/payment.

Case Study — Cashew & Coastal Retail: Women's Collectives Find the Margin

Section	Details
Setting	District: Raigad (coastal and foothill tracts) • Women's SHGs in cashew/kokum and multi-product foods; tourist circuits and Mumbai retail as outlets.
Challenge	Small, fragmented procurement; early/heavy pre-monsoon rains damage mango–cashew–kokum; local raw nut supply inconsistent as outside traders lift bulk at farm-gate; working capital is tight for seasonal buying.
What was observed	When SHGs secure packaging assets + labels + retail tie-ups, seasonal earnings thicken; tourist demand lifts sales when SKUs and hygiene are standard; farm-gate watermelon also moves quickly to itinerant vendors where groups broker transport.
Enablers that worked	SHG discipline, simple FSSAI/label templates, pooled procurement and transport, links to coastal shops and urban counters.
Replicable levers	Cluster procurement credit (secured by stocks) timed to harvest; grade-linked contracts with standard assays; shared shelling/peeling and pack-houses; tourism-route storefronts for coastal SKUs.

Input prices and the cost side of cultivation

The cost side of the price equation is driven by four budgets. Seed, fertiliser and crop protection. Energy for irrigation and mechanisation. Hired labour. Transport and market access. The rural price indices provide a composite view of the first two budgets and parts of the third. The State series shows that clothing, bedding and footwear, which track wages only indirectly, moved from 147 in 2019 to 2020 to 168 in 2023 to 2024 and to 175 in 2024 to 2025. Fuel, power and light rose over the period, which

[13] *https://www.researchgate.net/publication/377967766_E-NAM_Electronic_National_Agricultural_Market_Direct_Link_Between_Farmers_and_Consumers*

increases the cost of pumping, threshing and primary processing. The National Statistical Office series shows a moderation in fuel inflation in 2024 to 2025, but at a higher level of the index relative to pre pandemic years.

Fertiliser and seed prices are not fully visible in these consumer baskets. The working measure for this study will therefore combine three indicators. Fertiliser consumption per hectare by district as a proxy for intensity and cost exposure. Average retail prices of urea, di ammonium phosphate and one complex fertiliser in rural outlets to capture cash outgo in the peak month. The ratio of fertiliser spends to value of output for the two main cropping systems in each region, for example cotton soybean in Marathwada and Vidarbha, sugarcane and horticulture in western Maharashtra, and paddy plus pulses in Konkan and eastern districts. Diesel prices for agricultural pumps and for transport, and the average effective tariff for agricultural electricity connections, will complete the picture for energy costs.

The analytical approach for spreads is a simple decomposition that can be repeated every season for three reference commodities. One cereal, one oilseed or fibre crop, and one perishable vegetable. The method is as follows.

First, record the daily or weekly average farm gate price from a block level collection point or from the first APMC gate during the peak arrival window. Second, record the average wholesale price in the principal secondary market that absorbs produce from the same catchment. Third, record the retail price for the standard weight unit in the largest nearby consumption centre on the same day. Fourth, compute the ad valorem spread from farm to wholesale, and from wholesale to retail. Fifth, plot the spread against arrivals and against a proxy for transport intensity such as diesel consumption or average truck rates on the corridor.

For onion, the Nashik and Lasalgaon corridor offers a natural case. For soybean, the Amravati and Akola corridor is a good reference. For cotton, the Latur and Nanded corridor is appropriate. For a cereal, paddy in eastern districts where decentralised procurement operates will show the difference between an MSP floor and private bids. In each case, the analysis should distinguish normal days from glut days and from lean days. It should also tag lots that moved through e NAM or through direct purchase, so that the effect on spreads can be measured rather than inferred.

Public digital rails and risk management

Digital platforms span farm budgets: consumption-side Aadhaar-PDS/One Nation One Ration Card buffers spikes; production-side e-NAM/procurement registration/digital payments accelerate settlements/transparency. Sustained spread narrowing demands source quality-testing, credit for holding, small cold/ventilated storages averting distress sales; livestock/fisher KCCs/crop equivalents ease capital, enabling timed sales.

Three patterns emerge: (1) post-2019 rural living costs surged (food/fuel lead), hitting wage/smallholders via energy / transport/consumption; (2) crop prices vary unevenly, favouring mixed-asset portfolios when allied activities expand; (3) marketing evolves—APMCs core, but direct/digital gain traction, improving farm-consumer rupee shares where quality/logistics align.

Clear policy imperatives emerge: compress first-/last-mile costs/spreads; scale primary assaying for grade-based pricing sans haggling; fund small storage/aggregation for holds; real-time APMC dashboards mirroring e-NAM; promote efficient pumps/micro-irrigation/residue fodder/compost cutting energy/fertiliser; time-bound, rules-based spike relief complementing markets.[2

Deep Dive — Mahua Banks & Basic Processing: From Spoilage to Value

Section	Details
Setting	District: Gadchiroli — CFR villages handling mahua, bamboo, tendu, jamun.
Challenge	Spoilage after bumper collection days and distress sales due to lack of short-hold capacity; weak testing/packaging; buyers discount for grade uncertainty; cold chain discussed but basic processing is the first gap.
What was observed	Mahua banks cut spoilage and prevent forced selling; communities ask for simple sheds, shade drying, sieves, food-grade containers, labels, and buyers who honour grade and delivery windows; federated gram sabhas and FPO working-capital lines improve evenness of earnings.
Enablers that worked	Village-level aggregation and grading; federated GSs; standard contracts; small working-capital support; batchwise quality checks.
Replicable levers	Provide village processing kits (shade-drying, sieves, sealers); 2–4-week stock-holding credit; cluster plans by produce calendars (bamboo/mahua/tendu/lac); simple label and compliance support.

Deep Dive — Karmala's Banana Shift Needs Grading, Contracts, Logistics

Section	Details
Setting	District: Solapur • Block: Karmala; hubs Jeur–Kandar–Tembhurni; chronic migration >60%; wage gap ₹600 men / ₹300 women.
Challenge	Moving from cane (~₹1 lakh/acre) to banana (~₹3 lakh/acre) demands pack-house discipline, grading and forward contracts; altitude-driven lift constraints and drinking-water stress persist.
What was observed	NRLM loans show ~1% NPA locally; credit flows into tractors, small machinery, food-processing gear. Adoption sticks where SOP-driven practices (KVK/NRCP) are farmer-to-farmer demonstrated.
Enablers that worked	KVK Mohol's twice-weekly weather advisory; NRCP's tech (arils, dehydration) as market hooks; yard/cold-store network for staging.
Replicable levers	Contracting playbook (grade, penalties, payment T+7); cluster pack-houses with inline sorting; logistics slots tied to IMD advisories; producer credit lines secured against receivables.

Deep Dive — From Chilli to Custard Apple: First-Mile Fixes to Raise Prices

Section	Details
Setting	District: Nandurbar • Products: ODOP chilli; custard apple and jambhul belts; banana/papaya clusters in canal/well pockets.
Challenge	Weak grading/drying and limited cold rooms depress realisations; only 3 soil labs and ~9.2k insurance policies keep risk high; long distances to mandis (just 6 in district).
What was observed	Individual sales dominate; collection windows for perishable fruits miss mandi schedules; scope for solar/barn dryers, mini cold rooms, and scheduled aggregation days to lift grades and hold for bids.
Enablers that worked	Functioning input market (411 outlets; 324 service centres), SHG/gram-sangh networks, KVK community radio for advisories.
Replicable levers	FPO-run grade/assay corners at haats; low-cost dryers for chilli; mini cold rooms near mandis; fixed-slot transport booking; grade-linked contracts with transparent boards.

Deep Dive — Kokum to Multi-Product: Women Scale via Packaging & Collective Marketing

Section	Details
Setting	District: Sindhudurg • Women processors of kokum (agal, value-added) and COVID-era multi-product food units.
Challenge	Thin packaging assets, fragmented procurement, and short shelf-life cap margins; climate shocks (early May monsoon) compress raw material windows.
What was observed	Graduation pathway: start with small SHG loan on-time repayment reinvest in sealer/dehydrator/grinder pool procurement/transport. One group opened a Mumbai retail point, engaging 15–20 local women on wages/contracts.
Enablers that worked	Chetana training; SHG credit; NGO mentoring on labels/FSSAI; DBSKKV/KVK SOPs; peer networks for bulk buys and last-mile sales.
Replicable levers	Taluka-level pack-house slots, label templates, and shared e-commerce storefronts; seasonal raw-material MOUs; micro-grants for dehydrators; climate buffer: pre-monsoon procurement calendars + short-hold cold rooms.

2.4 State of Financial Ecosystem

2.4.1 Banking System and Financial Inclusion: Status

Table 50 Banking outreach, long view and current position

Indicator	1970-71	1970-71	1990-91	2000-01	2010-11	2020-21	2023-24	India 2023-24	Maharashtra share
Banking offices, SCBs (number)	1,471	1,471	5,591	6,294	8,037	13,160	13,929	1,59,130	8.8%
Rural banking offices, SCBs (number)	450	450	2,749	2,294	2,170	3,186	3,279	55,049	6.0%

Maharashtra's banking system has expanded steadily from the era of bank nationalisation to the present. The number of scheduled commercial bank offices rose from fewer than 1,500 in 1970 to over 13,900 in 2023–24. Rural outreach deepened through successive phases of branch expansion and financial inclusion, lifting rural offices from 450 to 3,279. However, the State's share of India's rural branches (6%) remains below its overall share of bank offices (8.8%). This indicates a spatially unbalanced financial footprint—dense across urban and peri-urban regions but relatively thin in remote talukas where rural livelihoods predominate.

The size of Maharashtra's banking system is nationally significant. As of September 2024, the State accounted for the highest aggregate deposits and gross credit among Indian States, with per capita deposits and credit more than double the national average. Yet, over 90% of these financial flows are concentrated in urban centres. The credit–deposit (CD) ratio is roughly at parity at the State level but varies sharply by geography: above 100 in urban areas and around 67 in rural regions. The low rural CD ratio suggests that a significant portion of rural deposits is intermediated elsewhere, while rural borrowers continue to depend on semi-urban branches or non-bank sources for working capital and investment credit.

Differences across bank groups shape credit access for rural borrowers. Public sector banks retain extensive branch coverage and provide over half of the outstanding credit. Private banks exhibit higher CD ratios but are largely urban in focus. Regional rural banks have modest credit portfolios with an average CD ratio of two-thirds, remaining critical in underbanked blocks. Small finance banks are emerging as important actors, lending dynamically to micro and small enterprises and allied rural activities. Foreign banks' rural presence remains minimal.

Financial inclusion indicators show extensive account coverage but limited credit depth. Maharashtra hosts about 3.6 crore Jan Dhan accounts—more than half in rural and semi-urban areas—with balances totalling ₹15,478 crore. Basic savings deposit accounts exceed 4.5 crore, holding nearly ₹19,000 crore. While the State has more ATMs per capita than the national average, two-thirds are urban, and only 13% are rural, keeping transaction costs high in remote areas. Kisan Credit Cards number over ₹41 lakhs, with outstanding credit of ₹56,488 crore—a key enabler for crop and allied working capital.

Credit composition has broadened gradually beyond traditional farm lending. Credit to agriculture and allied activities stands at ₹1.42 lakh crore, growing by over 16% in 2023–24. Priority sector advances reached ₹16.67 lakh crore, led by strong housing growth. The Annual Credit Plan (ACP) for 2024–25 targets ₹7.25 lakh crore in priority-sector lending—24% for agriculture and allied activities and over 60% for MSMEs. Mid-year data shows that disbursement volumes in agriculture are high and MSME loans are larger in value, underscoring the need for smaller, cashflow-aligned credit products that support dairy, fisheries, and on-farm processing enterprises.

For rural livelihoods, three structural implications emerge:

1. Access vs. proximity: Formal access has expanded, but physical and functional proximity remains uneven. Branches mapped to villages may be kilometres away, business correspondents are patchy, and cash services often irregular.
2. Low rural intermediation: The rural CD ratio points to structural outflows of deposits. Raising local lending—particularly for allied sectors such as dairy, poultry, and sericulture—could deepen intermediation if complemented by risk-sharing and doorstep services.
3. Digital infrastructure without full credit transmission: The JAM trinity (Jan Dhan – Aadhaar – Mobile) has reduced entry barriers, yet smaller producers face persistent frictions around documentation, seasonal incomes, and transaction time.

A forward agenda includes: aligning KCC limits with allied sectors; expanding RRBs and small finance banks in low-CD blocks; strengthening business correspondent networks for loan origination and recovery; ring-fencing small-ticket priority credit for women-led SHGs and producer groups; and integrating credit with insurance through livestock or warehouse instruments. Together, these measures can transform financial expansion into genuine livelihood diversification and resilience.

Table 51 Deposits, credit and CD ratio by centre, SCBs in Maharashtra

Centre type	Banking offices	Deposits ₹'000 crore	Credit ₹'000 crore	CD ratio per cent
Rural	3,279	129.38	87.01	67.3
Semi urban	3,275	259.52	192.00	73.9
Urban	7,375	4,278.94	4,319.71	100.9
All	13,929	4,667.85	4,598.72	98.5

Table 52 Bank group profile, SCBs in Maharashtra, as on 31 March 2024

Bank group	Offices	Deposits ₹'000 crore	Credit ₹'000 crore	CD ratio per cent
Public sector banks	7,528	2,250.48	1,990.92	88.5
Private banks	4,640	1,908.19	2,328.45	122.0
Small finance banks	894	32.58	31.22	95.8

Bank group	Offices	Deposits ₹'000 crore	Credit ₹'000 crore	CD ratio percent
Regional rural banks	750	22.85	15.52	67.9
Foreign banks	111	452.76	232.61	51.4
All SCBs	13,929	4,667.85	4,598.72	98.5

Deep Dive — Mann Deshi's Women-Centred Finance + Services Stack

Section	Details
Setting	District: Satara • Institutions: Mann Deshi (group lending, mentoring, market links).
Challenge	First-time women entrepreneurs lack collateral, documentation support, and technical services (animal health, soils) to translate credit into reliable income.
What was observed	Group loans (typical ₹60–70k, graduated up to ₹25 lakh for proven groups), ~99% recovery, doorstep KYC, UPI/NEFT, death insurance, and mentoring. Surrounding services: ~40 Pashu Sakhis, soil & livestock pathology labs (faster, affordable diagnostics), sewing/skills centres, sports nutrition, community radio (40–50 km reach), and cold storage for producer collectives.
Enablers that worked	Collateral-free group credit; doorstep processes; bundled advisory & diagnostics; market linkage help; storage access for perishables.
Replicable levers	Graduation ladders (₹50k ->□ ₹5–25L with compliance lightening), "credit+service" bundles (animal health, soil tests), mentor circles, and demand aggregation via radio/digital storefronts.

2.4.2 NABARD and Development Finance for Rural Maharashtra

Table 53 NABARD: finance and programmes numbers and impact

Area / instrument	Key number(s)	Period / "as on"	Why it matters on the ground
Priority-sector credit potential (State Focus Paper)	₹6,83,245 crore total; Agriculture & allied ₹1,76,842 crore; MSME ₹3,82,221 crore; Other priority sectors ₹1,24,182 crore	2024-25	Establishes the lending envelope for banks under ACP and where credit is expected to flow; anchors district PLPs and SLBC targets.
Agriculture break-up inside credit potential	Crop production ₹87,955 cr; Term loans for agri & allied ₹49,523 cr; Agri infrastructure ₹8,430 cr; Agri ancillary (incl. processing) ₹30,934 cr	2024-25	Signals push for working capital plus asset creation in dairy, fisheries, horticulture, storage and processing.
Ground Level Credit (GLC) priority sector	₹5,49,397 cr (of which Agriculture ₹1,45,040 cr; MSME ₹3,42,765 cr)	2022-23	Shows realised flow; 5-year CAGR ≈ 11.6% MSME led, with agriculture also rising.
RIDF (rural infrastructure)	23,399 projects; assistance sanctioned ₹22,945 cr; disbursed ₹17,852 cr (~78%)	up to 31-03-2023	Funds roads, bridges, minor irrigation, water supply directly reduces logistics cost, increases market access and irrigation security.
Irrigation acceleration	LTIF sanction ₹18,021 cr (utilised ₹14,877 cr); NIDABJSY sanction ₹6,655 cr (disbursed ₹4,630 cr); Cumulative irrigation funding ₹35,112 cr across RIDF/LTIF/NIDA (976 projects)	to 30-11-2023 / 31-03-2023	Expands assured water, stabilises yields and allied activities (fodder, dairy).
Watershed & climate adaptation	369 watershed projects over ~5 lakh ha; 64 "climate-proofing" projects + 13 soil rehab projects; Pro-Soil & 60 sustainable-cropping pilots	ongoing to 2023	Lowers drought risk, raises moisture retention and incomes in rainfed blocks.
Tribal development	58 TDF projects; ~49,569 families; ~44,930 acres under wadis	to 31-03-2023	Diversifies incomes in ST geographies (horticulture + livestock).

Area / instrument	Key number(s)	Period / "as	Why it matters on the ground
FPOs supported by NABARD	489 FPOs (various schemes); average annual turnover ₹2535 lakh	ongoing	Aggregation for inputs/marketing; improves price realisation and creditworthiness.
Microfinance SHG-BLP (State)	15.15 lakh SHGs; savings ₹4,742 cr; annual disbursal ₹6,027 cr; loans outstanding ₹6,242 cr	31-03-2023	Liquidity for women-led enterprises, petty trade, livestock and kitchen-garden cashflows.
JLGs for tenant/small farmers	21.99 lakh JLGs promoted; cumulative disbursal ₹32,193 cr; NABARD grants ₹18.66 cr to promote/credit-link 96,647 JLGs	31-03-2023	Collateral-light credit where land titles are weak.
Refinance	Short-term refinance: ₹6,484 cr to MSCB + ₹500 cr to RRBs; Long-term refinance: ₹12,872 cr to CBs/RRBs/SCBs/NBFCs	2022-23	Lowers cost of funds; lets banks scale crop loans, dairy, fisheries, farm mech.
Financial inclusion support (FIF)	Cumulative grants ₹149 cr (FLCs, FiDgi camps, micro-ATMs, BC enablement, CKYCR/AUA-KUA, mobile demo vans)	Inception-2023	Bridges last-mile service gaps that otherwise push households to informal credit.
Cooperatives/PACS modernisation	20,930 PACS; 12,000 identified for computerisation; coop strengthening roadmap articulated	2022-23	Readies PACS for storage, input trade, e-NWRs and post-harvest finance.

NABARD's intervention in Maharashtra rests on three complementary roles: credit planning, infrastructure creation, and inclusion deepening.

- **Credit planning:** The 2024–25 State Focus Paper pegs priority-sector credit potential at ₹6.83 lakh crore—25% for agriculture and over half for MSMEs—reflecting a rebalancing toward non-farm income. Within agriculture, the shift from short-term crop finance toward term lending for irrigation, mechanisation, livestock, and agro-infrastructure signals a move from price-based support to asset-based income security.
- **Infrastructure creation:** NABARD's RIDF and newer irrigation windows (LTIF, NIDA-BJSY) have collectively financed over ₹35,000 crore and nearly 1,000 projects across Maharashtra. These investments, reinforced by watershed and climate-proofing efforts, have improved irrigation reliability and fodder security, particularly in rainfed areas, reducing crop failure risks.
- **Inclusion and institutional linkages:** NABARD's support to SHGs, JLGs, and FPOs—alongside cooperative modernisation and PACS computerisation—has expanded credit access for women, smallholders, and tenant farmers. Over 22 lakh JLGs and federated SHGs now access working capital for livestock, trade, and micro-enterprises, while FPO promotion strengthens market connectivity.

NABARD thus integrates financial and physical infrastructure with local institutions, leading to measurable outcomes: steadier yields, faster market access, reduced credit cost, and greater income stability among small and marginal farmers households.

Rural Credit Ecosystem: Coverage, Quality, and Risk Management

Table 54 Snapshot of Rural credit ecosystems: coverage, quality and claims performance

Instrument / Scheme (unit)	Coverage / Activity	Flow / Stock (₹ crore)	Claims / Benefits (₹ crore)	Performance lens
Kisan Credit Card, MSCB (202324)	31.34 lakh KCC borrowers served	23,738 sanctioned (2023-24); 19,990 (2024-25 up to Dec)		High seasonal reach; co-op channel remains pivotal for crop working capital.
KCC by MSCB, FY detail	31.20 lakh short-term + 0.14 lakh long-term borrowers (2023-24); 26.31 lakh ST + 0.06 lakh LT (2024-25 up to Dec)	23,465 ST + 273 LT (202324); 19,869 ST + 120 LT (2024-25 up to Dec)		LT credit still a sliver vs ST; scope to deepen asset finance alongside crop loans.
PM Fasal Bima Yojana (PMFBY) 202223	104.06 lakh farmers; 62.99 lakh ha; Sum insured 29,867.98	Premium 4,691.51	Paid 4,090.63 to 78.44 lakh farmers	Payout ratio 87.2% of premium; paid-beneficiary coverage 75.4% of enrolled.
PMFBY 202324	242.54 lakh farmers; 163.25 lakh ha; Sum insured 74,986.03	Premium 10,141.12	Paid 8,084.25 to 121.95 lakh farmers	Payout ratio 79.7%; paid-beneficiary coverage 50.3%; avg area 0.67 ha/farmer.
PMFBY 202425 (up to Jan)	223.60 lakh farmers; 152.93 lakh ha; Sum insured 72,104.76	Premium 9,767.62	Proposed 678.97; settlement in progress	Early cycle; claims still being processed.
Weather-based Fruit Crop Insurance (WBCIS)	202324: 2.99 lakh farmers; 2.18 lakh ha; Sum insured 2,735.62	Premium 893.35	Paid 952.39 to 2.32 lakh farmers	Payout ratio 106.6%; fruit growers meaningfully cushioned in adverse weather.
SC subsidy: Dr. B. R. Ambedkar Krishi Swavalamban	11,092 beneficiaries (2023-24); 20,432 selected (2024-25 up to Dec)	158.70 (202324); 46.82 (2024-25 up to Dec)		100% subsidy for on-farm assets; strong inclusion lever for SC households.
ST subsidy: Birsa Munda Krishi Kranti	5,466 beneficiaries (2023-24); 11,402 selected (2024-25 up to Dec)	88.71 (202324); 23.88 (2024-25 up to Dec)		100% subsidy; targets water, energy and small machinery gaps for ST farmers.
Loan waiver: MJP Shetkari Karjamukti (cumulative to Nov '24)	32.27 lakh farmers	20,497		One-time relief; does not substitute for timely, low-cost working capital.
Timely-repayment incentive (Protsahanpar Labha) (cum. to Nov '24)	14.50 lakh beneficiaries	5,249		Rewards credit culture; complements KCC.
Interest rebate: Dr. P. Deshmukh	27.34 lakh farmers (2022-23); 14.39 lakh (2023-24)	430.24 (2022-23); 368.00 (2023-24)		3% subsidy up to ₹3 lakh for on-time repayment; buffers cost of credit.
PM-KISAN (cum. to Oct '24)	117.55 lakh farmer families	33,468.54 transferred		Stable income backstop that syncs with crop cycles.
Namo Shetkari Mahasanman (cum. to Oct '24)	91.45 lakh beneficiaries	9,055.83		State top-up to PM-KISAN; strengthens liquidity between seasons.
SHG Bank Linkage (as on 31 Mar '24)	16,30,589 SHGs, of which 13,80,838 are women	Savings 3,545.88; Loans disbursed 9,263.96; Outstanding 9,599.17		Women-led microfinance driving livestock, petty trade and micro-processing.
MAVIM network (as on 31 Dec '24)	1,63,936 SHGs; 18.11 lakh members	Bank loans (cum.) 10,475.48; Internal loans 3,779; Savings 1,404		Federation-led services improve last-mile access and enterprise readiness.

Maharashtra's rural credit architecture now operates on three interlinked rails—seasonal liquidity, risk protection, and income support—that together stabilise household cashflows.

1. Seasonal working capital: KCCs remain the backbone of crop finance, with the cooperative sector alone serving over 31 lakh borrowers in 2023–24. While liquidity for input and harvesting operations is strong, long-term credit for asset formation remains underdeveloped, highlighting the need to couple KCCs with term finance for irrigation, sheds, and small machinery.

2. Risk protection: Crop insurance under PMFBY has scaled, covering 242.5 lakh farmers and 163 lakh hectares in 2023–24, with payout ratios of 80%—and even higher for fruit crops under WBCIS—demonstrating tangible cushioning during weather shocks.

3. Income and interest support: Schemes such as interest subvention, Protsahanpar Labha, and predictable transfers under PM-KISAN and Namo Shetkari collectively inject liquidity and cover temporary income gaps, curbing distress borrowing. Targeted ST/SC capital subsidy programs further enhance productive assets for excluded groups. Meanwhile, women's SHGs—16.3 lakh strong, circulating ₹9,600 crore in bank credit—anchor financial access for micro-enterprises and household-level diversification. These mechanisms have improved the coverage (wider reach), quality (lower effective borrowing costs), and claims performance (timely payouts) of rural finance. Remaining challenges include increasing term loan share, accelerating claim settlement during high-loss seasons, and scaling SHG-linked enterprises from subsistence to viable-small levels.

Exemplar - Inputs without Liquidity: The KCC Slide and Its Effects

Section	Details
Setting	District: Yavatmal dense input ecosystem (~1,138 retail outlets; ~450 agro-service centres).
Challenge	Labour gaps push families to hire tractors/implements; weedicides substitute for scarce manual weeding. Despite market reach, KCC in-force fell ~66.9k ~59.5k (2022–24), thinning cash exactly when inputs are due.
What was observed	Tight liquidity forces input rationing between sowing and harvest; yield-risk rises when top-dressing or timely sprays are skipped.
Enablers that worked	SHG bridges for small input tickets; FPOs pooling demand to cut input costs; rental pools for implements; staggered payment plans with local dealers.
Replicable levers	Restore KCC lines with seasonal top-ups; FPO-negotiated input packs with deferred terms; village implement banks; safe-use weedicide training paired with mechanical weeding demos where feasible.

Exemplar - Last-Mile Microfinance that Stabilises Cash for Landless Households

Section	Details
Setting	District: Beed • Block: Kaij — Janvikas Samajik Sanstha + ANIK Financial Services working with landless/marginal households, including Denotified Tribes and Dalit communities.
Challenge	Hills vs. Manjra basin split: water stress and rain timing dominate the hills; basin areas feel urban draw on dam water. Landless/small holders need predictable cash to enter self-employment; formal credit rails exist but miss many first-time borrowers.
What was observed	ANIK ₹50-crore portfolio with ~99% recovery layers over Beed's strong rails (CD ratio 81.4%, SHG credit ₹1,177 cr in FY24), smoothing cash cycles for households with grazing-patta origins or fragmented plots. Micro-loans are used for trade and services, not just farm inputs.
Enablers that worked	Dense SHG networks; micro-lenders riding KCC/PM-Kisan/insurance rails; proximity to command areas in the basin; community org handholding for documentation and repayments.

Section	Details
Replicable levers	Small-ticket working-capital loans with seasonal repayment calendars; multilingual docs + doorstep KYC; bundled micro-insurance; link loans to scheme entitlements; simple cash-flow coaching for first-time entrepreneurs.

Exemplar — Cashew Units Need Procurement Credit, Labour Solutions, and Grade Discipline

Section	Details
Setting	District: Sindhudurg • ~350 small/large cashew processors (industry account).
Challenge	Working capital at procurement time is tight; labour costs and shortages rising; local raw nuts scarce as outside traders lift farm-gate volumes; quality/aggregation inconsistent.
What was observed	Many units import raw material from Mumbai; production targets slip when early monsoon hits cashew/kokum; enterprises struggle without AIF-style lines tied to procurement + storage + shelling/peeling capacity.
Enablers that worked	SHG/UMED credit culture (high repayment), CSR-supported infra pilots, access to DBSKKV tools/process SOPs, GI branding momentum (e.g., Sawantwadi craft shows how identity boosts value).
Replicable levers	Cluster procurement credit (AIF/AHIDF-aligned) secured against stocks; grade-linked contracts with standard assays; shared shelling/peeling lines; labour pools with skilling + hostels; forward linkages to large buyers.

2.4.3 Government Fiscal Health, Revenue Mix, and Budget Allocation Trends

Table 55 Core fiscal stance Source: Economic Survey of Maharashtra 2024-25

Item	Number	Context for rural livelihoods
Fiscal deficit	₹1,10,355 cr (2.4% of GSDP)	Inside the 3% FRBM ceiling preserves headroom for capex in roads/irrigation.
Revenue deficit	₹20,051 cr (0.4%)	Small gap in day-to-day financing; manageable drag on social/service delivery.
Primary deficit	₹53,628 cr (1.2%)	Interest costs contained enough to keep net resources for development positive.
Debt stock	17.3% of GSDP	Well below the 25% FRBM limit low rollover risk; supports stable borrowing costs.
Budgetary deficit (overall)	₹11,299 cr	Modest aggregate gap; signals fiscal discipline.
Revenue receipts	11.0% of GSDP	Ten-year receipts growth ~12% p.a.; SOTR buoyancy underpins predictability.
Annual Scheme outlay	₹1,92,000 cr	Programme pipeline that converts budget into assets/services.
…Social & Community Services	40.0% share	Health, education, welfare feeds rural human-capital and labour productivity.
…Transport & Communication	18.6% share	Roads/bridges compress farm-to-market costs; enable non-farm jobs.
…Irrigation & Flood Control	9.5% share	Stabilises yields; expands rabi/horticulture acreage.
…Agriculture & Allied	7.5% share	Direct farm support, extension, on-farm assets.
…Rural Development	3.7% share	Local works, livelihoods, village services.
Capex share in total spend	22.4% (FY25 BE)	Higher capital intensity = more durable growth multipliers in rural belts.

Item	Number	Context for rural livelihoods
Gender budget share	3.3%	Targeted resources for women's economic participation (SHGs, skilling, safety-nets).
Child budget share	12.5%	Nutrition/learning investments that raise medium-term rural productivity.

Maharashtra starts FY 2024-25 with strong fiscal discipline. The deficit stands at 2.4% of GSDP, debt at 17.3%, and primary deficit at 1.2%—all well within FRBM limits. This preserves flexibility for shocks like poor monsoons or price spikes. Revenue receipts reach 11% of GSDP, driven by steady State Own Tax Revenue growth and 15th Finance Commission grants. These include support for PRIs, ULBs, and the State Disaster Risk Management Fund. However, PRI spending often lags receipts, signaling needs for faster project preparation and audits.

- Key Rural Impacts: Capex claims 22.4% of total spending, prioritizing assets over handouts.
- Transport & Communications (18.6%): Roads and bridges speed farm-to-market access, cut truck costs, and narrow price gaps for perishables.
- Irrigation & Flood Control (9.5%): Modernized canals and tanks expand rabi/horticulture area while steadying yields and fodder for allied income.
- Social Services (40%): Health, schools, and skilling build non-farm job pipelines between crop seasons.

The 15th FC calibrated grants by tier and conditionality: rural:urban shares moving from 67:33 to 66:34 in FY 24-25; in rural local bodies basic:tied is 40:60 (untied for flexible gaps; tied for water/sanitation). Million-plus cities receive performance-linked grants; non-million-plus have basic/tied mixes. SDRMF flows have been steady and well-used, a crucial trait in a climate-exposed State. Where utilisation fell short (e.g., some PRI grants in FY 2023-24), the policy lever is faster project readiness (shelf of shovel-ready works, standardised designs) and smoother claim/UC cycles, not lower ambition. Decades of RIDF investments have laid rural roads, bridges, water-supply schemes, warehousing, fishery and market infrastructure, while irrigation windows (LTIF/NIDA) crowd-in State execution in command areas. The effect on rural incomes shows up as (i) lower post-harvest losses and wider marketing windows (especially for onions, grapes, and banana), (ii) reduced travel time for inputs/services and school/health access, and (iii) resilience when rainfall deviates fewer catastrophic income collapses and better credit performance. Strategically co-programming State capex with RIDF e.g., transport-irrigation-storage clusters tied to a set of APMCs and FPOs delivers outsized returns compared with atomised projects.

Gender and Child Focus: The 3.3% Gender Budget embeds SHG value chains, skilling, and mobility into schemes. The 12.5% Child Budget supports nutrition, early childhood care, and school infrastructure—both lifting female LFPR and lifetime earnings.

Credit Backbone: MUDRA has disbursed ₹19,392 crore to 20.14 lakh beneficiaries by September 2024. Shishu (≤₹50k) funds nano-trade; Kishor (₹50k-5L) equips village shops/processing; Tarun (₹5-10L) formalizes hiring enterprises. PM Vishwakarma and SHG credit (MAVIM/NRLM) target artisans and women. Next steps: speed Kishor/Tarun disbursals, bundle with market access (haats, e-commerce), and use guarantees to ease bank caution.

Three near-term levers will determine how much of the budget turns into durable rural gains:

- Disbursement velocity: tighten PWD/Irrigation procurement and milestone-based releases; expand the shelf of standard-design works for PRIs/ULBs to absorb tied grants quickly.

- Capex composition: keep roads & bridges dominant while protecting irrigation modernisation and post-harvest/storage the trio that most narrows farm-to-retail spreads.
- Programme credit linkage: wire FPOs/SHGs/Artisans into capex locations (pack-houses, haats, rural industrial parks) so new assets immediately host income-earning activity.

Maharashtra's FY 2025 fiscal design is prudently expansionary macro-safe yet growth-minded. Its credibility rests less on the headline deficit and more on whether kilometres of roads, hectares brought under assured water, and functioning storage/health/school assets arrive on time where rural households live and earn. With steady FC flows, an elevated capex share, and live credit rails (KCC/MUDRA/Vishwakarma/SHGs), the State has the ingredients to translate rupees into sustained increases in rural incomes and resilience provided execution keeps pace.

3 STATUS OF SOCIAL CAPITAL

Maharashtra has made remarkable strides in human development over the past two decades, transforming from a state marked by uneven rural-urban divides into a leader in key social indicators. With near-universal institutional deliveries (95%), sharply improved child immunisation rates (74% fully vaccinated), and one of India's densest networks of over 7 million rural women mobilised into self-help groups under UMED/MSRLM, the state has built strong foundations in health coverage, financial inclusion, and community mobilisation. These gains, underpinned by proactive initiatives like the Rajmata Jijau Nutrition Mission and convergence with national programmes such as NHM and ICDS, have driven down poverty, boosted school enrolmen t, and enhanced women's agency, positioning Maharashtra ahead of many peers in HDI rankings and SDG progress. Yet, persistent challenges—stagnant child stunting at 35%, anaemia affecting nearly 70% of children, rapid population ageing, and climate-vulnerable tribal regions—underscore that sustaining this momentum requires deepening social capital to convert human development inputs into resilient rural livelihoods. This chapter examines these dynamics across demographics, health-nutrition outcomes, and institutions, highlighting levers to build on Maharashtra's progress for equitable, shock-proof communities.

In Maharashtra, the strength of rural livelihoods now depends as much on social capital as on land, water, or physical infrastructure. Networks of kinship, caste, informal support groups, self-help groups (SHGs), farmer producer organisations (FPOs), and local government institutions mediate how households cope with drought, access food and health services, negotiate wages and prices, and demand accountability from the state. Social capital thus acts both as a buffer against shocks and as an engine for long-term resilience and upward mobility.

This chapter situates human development and social capital at the core of Maharashtra's rural transformation story. It first maps demographic change – shrinking child cohorts, a large but mobile working-age population, and fast-growing elderly numbers – to show how the social base of villages is being reconfigured. It then examines nutrition and health outcomes that define the quality of human capital, paying particular attention to the triple burden of malnutrition and the rise of non-communicable diseases (NCDs). The chapter also assesses the roles of people's institutions (SHGs, FPOs, NGOs, and social movements) and local institutions (Panchayats, cooperatives, traditional and religious bodies) in building or eroding trust, voice, and collective action.

By bringing these strands together, the analysis argues that Maharashtra's adaptation capacity and livelihood prospects hinge on how effectively it converts its demographic dividend into human development gains and how equitably it invests in the social institutions through which rural communities organise, negotiate, and protect themselves.

3.1 Demographic Overview

3.1.1 Population distribution by region, growth rate, trends, and migration

Maharashtra, India's second most populous state, spans 36 districts grouped into six administrative divisions – Konkan, Pune, Nashik, Aurangabad, Amravati, and Nagpur – covering over 3.07 lakh sq. km. Its social and economic geography ranges from the urban–industrial corridors of Mumbai, Pune, and Nagpur to the drought-prone and agrarian belts of Marathwada and Vidarbha, creating highly differentiated demographic and livelihood patterns.

Table 56 Projected Population (in Crores) of Maharashtra

Sector	Sex	2011 Census	2021 Projection	2024 Projection	2025 Projection
Rural	Male	3.15	3.33	3.36	3.37
	Female	3.00	3.14	3.16	3.17
Total Rural		6.16	6.47	6.52	6.54
Urban	Male	2.67	3.14	3.27	3.31
	Female	2.41	2.83	2.95	2.99
Total Urban		5.08	5.97	6.22	6.30
Total Maharashtra	Male	5.82	6.47	6.63	6.68
	Female	5.41	5.97	6.11	6.16
Grand Total		11.24	12.44	12.74	12.83

Source: 1) Office of Registrar General of India 2) Report of the technical group on population projections November, 2019, Ministry of Health & Family Welfare, GoI

Table 15 (Projected Population of Maharashtra) shows that the state's population rises from 11.24 crore in 2011 to an estimated 12.83 crore in 2025, an increase of about 1.6 crore over fourteen years, but with sharply divergent rural and urban trajectories. Rural population grows only marginally from 6.16 crore to 6.54 crore, while urban population climbs from 5.08 crore to 6.30 crore, signalling a continued structural shift towards towns and cities as centres of employment and services.Gender composition remains relatively stable in numerical terms: rural males increase from 3.15 crore to 3.37 crore and rural females from 3.00 crore to 3.17 crore over 2011–2025. Urban growth is faster, with males rising from 2.67 crore to 3.31 crore and females from 2.41 crore to 2.99 crore, mirroring the expansion of urban labour markets and the gradual feminisation of certain informal service and manufacturing segments

For rural livelihoods, the near-stagnant rural population alongside rapid urban expansion has three significant implications.

- Migration – both seasonal and permanent – remains a central feature of rural economies, especially for youth aged 15–29 years who move towards construction, manufacturing, and services work in cities such as Mumbai, Pune, and Nagpur.
- Declining fertility and changing dependency ratios reduce the number of child dependents but, when combined with sustained youth out-migration, thin the local agricultural labour base and weaken community institutions that rely on younger cohorts.
- The relatively slower growth of rural female population, compared to urban women, underscores limited livelihood options in villages, where women's work is still concentrated in low-paid agricultural and unpaid domestic labour.

Maharashtra is simultaneously a major destination and origin state for migration, reflecting its dual profile of agrarian vulnerability and industrial dynamism. Census 2011 recorded about 79 lakh migrant workers in Maharashtra, nearly one-fifth of India's total migrant workforce, anchored in the urban-industrial centres of Mumbai, Pune, and Nagpur. Rural districts, particularly in Marathwada and Vidarbha, continue to witness out-migration driven by agricultural distress, water scarcity, and lack of non-farm jobs, resulting in seasonal and circular labour flows that are now integral to the rural livelihood system. The COVID-19 lockdowns of 2020 starkly exposed this dependence, as large numbers of migrant workers returned from cities to their villages, revealing the fragility of urban informal livelihoods and the extent to which rural households depend on remittances, circulatory labour, and urban-centred opportunities. Subsequent years have seen a partial reflow back to cities but with heightened awareness of risk, making migration both a survival strategy and a marker of vulnerability in a climate-stressed and economically volatile context.

Migration has long been a defining feature of Maharashtra's socio-economic fabric, reflecting both its agrarian vulnerabilities and its status as one of India's largest industrial hubs. According to Census 201[114], the state accounted for nearly [79] lakh migrant workers, the highest among all states, making up almost one-fifth of India's total migrant workforce ([4].[14] crore). The urban-industrial centres of Mumbai, Pune, and Nagpur continue to draw workers from across the country into construction, manufacturing, services, and the informal economy, while in parallel, many rural districts of Maharashtra witness out-migration driven by agricultural distress, water scarcity, and limited employment opportunities, leading to seasonal and circular flows of labour. This dual character as both a receiver and sender of migrants makes Maharashtra central to India's migration story. The COVID-[19] lockdowns of [2020] laid bare these dynamics: lakhs of migrant workers, suddenly stripped of work and shelter, were forced into a large-scale reverse migration from Maharashtra's cities back to their villages, highlighting both the fragility of urban livelihoods and the deep interlinkages between rural distress and urban labour markets. In the years since, migration patterns in the state have continued to reflect these intertwined pressures of livelihood insecurity, urban dependence, and climate-induced rural stress, reinforcing migration as both a survival strategy and a marker of vulnerability[15].

The NSS 78th Round (2020–21)[16] provides detailed insights into migration drivers in rural sheds light on the reasons for migration in rural Maharashtra and shows sharp gender differences in both magnitude and motives. Among rural men, around one in ten reported being migrants, with work-related reasons dominating: seeking employment, better employment, taking up a job, and business together account for a substantial share, alongside moves prompted by migration of an earning member and marriage. Environmental and distress factors, such as water scarcity, droughts, floods, and displacement due to development projects, appear in smaller percentages but point to the underlying climate and resource stresses that shape mobility choices.

For rural women, migration is overwhelmingly driven by social institutions, particularly marriage, which accounts for the vast majority of moves, while employment- and environment-related reasons remain numerically small as primary drivers. Nonetheless, emerging categories such as housing problems and healthcare-related reasons indicate slowly shifting patterns of female mobility beyond marriage alone. When male and female migration are considered together, employment remains a central driver, while water scarcity, disasters, and social unrest, though smaller in proportion, highlight “silent” but persistent distress migration.

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[14] https://censusindia.gov.in/nada/index.php/catalog/[42597]

[15] https://prsindia.org/theprsblog/migration-in-india-and-the-impact-of-the-lockdown-on-migrants

[16] https://www.mospi.gov.in/sites/default/files/publication_reports/MultipleIndicatorSurveyinIndiaf.pdf

This data underscores that rural migration in Maharashtra is both gendered and multi-causal: men predominantly move in pursuit of livelihoods, women mainly through marital relocation, and climate-related pressures increasingly intersect with economic motives. As droughts and water stress intensify, these patterns are likely to deepen, reshaping rural demographics, care responsibilities, and the social capital available within villages.

3.1.2 Age structure: dividend and ageing

Population by Age: Children, Youth, and Elderly

Table 57 Population of Maharashtra by Age Group and Sex (Census 2011 & Projections for 2021 and 2026, in crore)

Age Group	2011 Census	2021 Projection	2026 Projection
04	0.95	0.84	0.79
59	1.00	0.88	0.85
1014	1.05	0.97	0.89
1529	3.17	3.25	3.16
3059	3.95	5.05	5.54
60+	1.12	1.45	1.70
Total	11.24	12.44	12.93

Source: 1) Office of Registrar General of India 2) Report of the technical group on population projections November, 2019, Ministry of Health & Family Welfare, GoI

Population by age group

Table 16 (Population by Age Group) shows that Maharashtra is undergoing a clear demographic transition from a youthful profile towards an older age structure. The 0–14 age group shrinks from about 3.0 crore in 2011 to 2.53 crore by 2026, reflecting sustained fertility decline and the move towards smaller families.

The 15–29 cohort remains broadly stable at around 3.2 crore over 2011–2026, ensuring a steady youth base but also signalling ongoing pressure on labour markets, particularly for first-time job seekers. The most pronounced increase is in the 30–59 group, which rises from 3.95 crore in 2011 to 5.54 crore in 2026, marking the deepening of Maharashtra's demographic dividend with a large, potentially productive working-age population. At the same time, the elderly population (60+) jumps from 1.12 crore to 1.70 crore – a 50 percent increase in 15 years – pointing to mounting demands on health, social security, and long-term care systems.

Table 58 Projected Population Characteristics of Maharashtra (2011-2036)

Year	014 (crore)	1559 (crore)	60+ (crore)	Median Age (years)	Young Dependency (%)	Old Dependency (%)	Total Dependency (%)
2011	3.00 (26.7%)	7.12 (63.3%)	1.12 (10.0%)	27.3	42.2	15.7	57.9
2016	2.84 (23.9%)	7.76 (65.4%)	1.27 (10.7%)	29.2	36.6	16.4	53.0
2021	2.69 (21.6%)	8.30 (66.7%)	1.45 (11.7%)	31.3	32.5	17.5	50.0
2026	2.53 (19.6%)	8.70 (67.3%)	1.70 (13.1%)	33.4	29.1	19.5	48.6
2031	2.42 (18.1%)	8.93 (66.9%)	2.00 (15.0%)	35.6	27.0	22.4	49.4
2036	2.28 (16.7%)	9.05 (66.2%)	2.34 (17.1%)	37.7	25.2	25.8	51.0

Source: 1) Office of Registrar General of India 2) Report of the technical group on population projections November, 2019, Ministry of Health & Family Welfare, GoI

Dependency ratios and ageing

Table 17 (Projected Population Characteristics, 2011–2036) further clarifies this transition. The share of children (0–14) falls from 26.7 percent of the population in 2011 to 16.7 percent in 2036, while the working-age group (15–59) rises in both absolute and relative terms, peaking at 67.3 percent in 2026 before stabilising around two-thirds of the population.

The elderly share grows from 10 percent in 2011 to 17.1 percent in 2036, with their numbers more than doubling, making population ageing one of the most striking demographic shifts in the state. The median age moves sharply upward from 27.3 years in 2011 to 37.7 years in 2036, indicating a rapid greying of society over just 25 years.

Dependency ratios reflect this transformation:

- The young dependency ratio falls from 42.2 percent in 2011 to 25.2 percent in 2036, easing child-related consumption burdens.
- The old-age dependency ratio rises from 15.7 percent to 25.8 percent, nearly doubling the relative burden of elderly support.
- Total dependency declines up to 2026 but begins to rise again by 2036, driven primarily by ageing rather than child dependents.

For rural livelihoods, this implies fewer children per household but more older dependents, changing labour allocation, care responsibilities, and intergenerational support norms. Families may be able to invest more in each child's education, yet youth out-migration leaves many rural communities with ageing populations and reduced local labour. Women are likely to shoulder a disproportionate share of elder care, especially where male migration and feminisation of agriculture are pronounced, creating new time burdens and health risks.

Policy responses will need to operate on two timelines: leveraging the demographic dividend of the 2020s through job creation, skills, and productive rural enterprise, while simultaneously building systems of geriatric care, pensions, and social protection to support an ageing society by the 2030s. This has direct implications for how social capital is built and maintained, as intergenerational support, community-based care, and local institutions will increasingly mediate wellbeing in older age.

3.1.3 Social composition: SC and ST communities

Table 59 Scheduled Castes (SC) and Scheduled Tribes (ST) in Maharashtra, Census 2011

Category	Total Population (crore)	% of State Population	Rural Population (crore)	% of Group in Rural	Urban Population (crore)	% of Group in Urban
SC	1.33	11.8%	0.75	56%	0.58	44%
ST	1.05	9.4%	0.90	86%	0.15	14%
Total (SC+ST)	2.38	21.2%	1.65	~69%	0.73	~31%

Source: Census 2011

Table 59 (SC and ST in Maharashtra, Census 2011) shows that Scheduled Castes (SCs) and Scheduled Tribes (STs) together comprise over one-fifth of the state's population, at 11.8 percent and 9.4 percent respectively. SCs have significant presence in Marathwada, Western Maharashtra, and parts of Vidarbha, while STs are concentrated in the tribal belts of Nandurbar, Gadchiroli, Thane, Palghar, and northern Vidarbha.

Settlement patterns differ sharply by group. SCs are more urbanised: about 56 percent (0.75 crore) live in rural areas and 44 percent (0.58 crore) in urban centres, reflecting gradual integration into industrial and service-sector labour markets in cities such as Mumbai, Pune, and Nagpur. Yet, rural SC households remain heavily dependent on agriculture, often as landless labourers or marginal farmers, as well as on traditional caste-linked occupations that are typically low-paid and insecure.

STs, in contrast, are overwhelmingly rural, with 86 percent (0.90 crore) residing in villages and only a small share in towns. Their livelihoods are closely tied to subsistence agriculture, shifting cultivation, and forest-based activities, leaving them acutely vulnerable to deforestation, ecological degradation, displacement, and barriers in accessing education, healthcare, and markets.

Livelihood implications

The rural child population (0–6 years) in Maharashtra was about 0.77 crore (12.5 percent of the rural population) in 2011, slightly above the state average, indicating higher fertility in villages and a greater dependency burden in rural and especially SC/ST households. Workers formed 49.8 percent of the rural population, higher than the overall state worker share, underlining the heavy reliance on labour-intensive livelihoods such as agriculture, forestry, and informal work among disadvantaged groups.

Taken together, SCs and STs account for around 21 percent of Maharashtra's population but continue to face structural inequalities and heightened exposure to precarious work. The social and spatial divide – with SCs more present in urban informal labour markets and STs concentrated in ecologically fragile rural regions – creates distinct but interconnected challenges: urban poverty, caste-based discrimination, and informalisation for SCs; and ecological stress, displacement, and relative isolation for STs. Addressing these requires differentiated strategies that strengthen rural livelihood security in tribal belts, enhance access to land and forests, and improve social protection in urban labour markets, while ensuring equitable education and health services across both groups.

Inclusion Policies

Tribal welfare in Maharashtra combines national and state-level schemes. These include -

- Tribal development programmes: State tribal development plans focus on education (e.g., ashram schools), health, livelihood diversification, and infrastructure in tribal and PVTG areas, often using Tribal Sub-Plan funds and dedicated Tribal Research Institutes (TRIs) to inform policy.[18]

- National missions: National initiatives such as the Sickle Cell Anaemia Elimination Mission, Mission Indradhanush, and TB and leprosy control programmes are particularly relevant for tribal populations in central and northern Maharashtra with high disease burdens.[19][20]

- Community-based models: Case studies from Melghat and Palghar show that participatory engagement with tribal communities – including women's groups and youth collectives – can significantly reduce malnutrition and child mortality when combined with improved outreach services and social accountability.[20][21]

For SC communities, state-level social justice and urban poverty programmes, combined with national social protection schemes (PMAY, NSAP, PDS, and urban employment schemes), shape access to housing, food, and basic services, but informalisation of work still limit the returns to human development investments.

3.2 Nutrition and Health: Foundations of Social Capital

Maharashtra's nutrition and health profile reflects a combination of significant gains and stubborn gaps. The state has expanded immunisation and maternal and child health services and has seen gradual poverty reduction, yet continues to suffer from high levels of undernutrition, rising obesity, and large disparities by region, caste, and income. The state carries a triple burden of malnutrition: chronic child undernutrition, widespread anaemia and micronutrient deficiencies, and rapidly growing overweight and obesity in adults and children. Health outcomes display a similar duality: while maternal and child indicators have improved, rural and tribal areas still experience poorer access and outcomes, and the emerging burden of non-communicable diseases (NCDs) among adults and the elderly is not yet matched by responsive health systems.

Public health infrastructure remains uneven, with persistent gaps in staffing, equipment, and medicines in many districts, particularly tribal and remote areas. These deficits not only limit preventive and curative care but also compound the vulnerability of marginalised groups who rely most

heavily on public services, thereby weakening the human capital base essential for resilient livelihoods.

Human development policies and programmes

Maharashtra has launched multiple initiatives over the last two decades to improve health, nutrition, and education, often ahead of national policy. Key pillars include:

- Nutrition: The State Nutrition Mission (Rajmata Jijau Mother–Child Health and Nutrition Mission) pioneered a "mission mode" approach to undernutrition, particularly in tribal belts, combining ICDS strengthening, data-driven monitoring, community mobilisation, and convergence with health, water, and sanitation. Recent policy directions emphasise holistic nutrition, food fortification, Smart Anganwadis, and stronger IEC campaigns to combat malnutrition.

- Child development and school feeding: ICDS and PM Poshan (mid-day meals) provide supplementary nutrition, growth monitoring, and early childhood education, with state-level efforts to improve food quality, kitchen infrastructure, and community oversight of anganwadis and schools.

- Health: Under the National Health Mission (NHM), Maharashtra has invested in primary health centres, sub-centres, and community health workers, alongside targeted campaigns such as Mission Indradhanush for immunisation and disease-control programmes for TB, leprosy, and vector-borne diseases. State-level human development strategies call for expanded financial protection, better referral systems, and stronger school health programmes.

- Education and skills: SDG mapping for the state highlights investments to universalise access to schooling up to Class X, reduce dropout, and strengthen vocational and life-skill education, with a focus on girls and marginalised communities.

These programmes have delivered visible gains in institutional deliveries, immunisation, school enrolment, and poverty reduction, but the persistence of anaemia, child stunting, low diet diversity, and low insurance coverage shows that implementation gaps, quality deficits, and social inequalities remain significant.

Health and rural livelihood linkages in Maharashtra

Health and nutrition function as productive assets in rural Maharashtra, shaping labour capacity, time use, and risk management. Agriculture and rural non-farm work still depend heavily on family labour and the ability to align effort with short seasonal windows; ill-health reduces effective labour supply precisely during peak agricultural and wage periods.

Anaemia among women and adolescents lowers physical stamina and learning outcomes, translating first into lower productivity and later into constrained occupational mobility and earnings. Recurrent illness among children raises care burdens on women, compresses their income-earning time, and undermines future human capital via missed schooling and impaired cognitive development. When sickness coincides with monsoon-related disease spikes or climate shocks, households face crop losses, wage loss, and medical costs simultaneously, often resorting to distress sales of grain, livestock, or jewellery.

Because much rural health expenditure is still out of pocket, a single hospitalisation can wipe out a year's modest surplus, pushing families into high-cost borrowing, reduced food quality, deferred input purchases, or withdrawing children from school for caregiving. In tribal and remote blocks, long distances, staff shortages, and weak transport infrastructure transform treatable illness into prolonged disability and income loss. The rise of NCDs adds a chronic drain on cash and time: hypertension and diabetes may not immediately remove adults from the workforce, but they reduce work intensity and increase vulnerability to heat and stress, especially in farm labour.

On the supply side, the reach and quality of primary healthcare, anganwadi services, and community health workers strongly influence nutrition and maternal–child outcomes, while on the financial side, insurance coverage, empanelled facilities, and fair pricing determine whether care is accessible when needed. Strengthening these linkages yields a double dividend: improved wellbeing and more stable incomes through protected labour power, reduced shock impacts, and greater capacity to invest in seeds, livestock, skills, and small enterprises.

Communicable diseases and health risks

Maharashtra's health profile still bears the imprint of communicable diseases, even as their relative share in the total disease burden declines. According to the Health Dossier (2021)[17], in Maharashtra's communicable, maternal, neonatal and nutritional diseases account for 22 percent of DALYs, below the India average of 27 percent yet still material. TB treatment prevalence is 131 per 100,000, higher in

[17] *https://nhsrcindia.org/sites/default/files/practice_image/HealthDossier2021/Maharashtra.pdf*

women at 148 than men at 115, and higher in urban areas at 148 than rural at 117. Awareness is high, but only three quarters correctly identify droplet transmission, and stigma persists, with about a quarter of women and one third of men preferring secrecy about a family member's TB. Leprosy prevalence is 1.19 per 10,000, almost double the national average of 0.61, with 16,531 new cases in 2019 to 2020. Vector borne risk continues, with 8 malaria deaths and 29 dengue deaths in 2019 to 2020. Under five morbidity remains visible, ARI 3 percent, fever 17 percent, diarrhoea 9 percent, with treatment seeking at 63, 81 and 72 percent respectively, but only 60 percent of diarrhoea cases received ORS and two thirds were given less to drink than usual. HIV awareness is high, women 88 percent and men 95 percent, yet comprehensive knowledge is lower, women 34 percent and men 43 percent, and testing remains limited, women 35 percent and men 16 percent.

3.2.1 Nutrition Status: Malnutrition, Hunger, and Obesity

Malnutrition

Maharashtra continues to face high levels of child undernutrition, with limited improvement since NFHS-4. According to NFHS-5[18], 35% of children under five are stunted, 26% wasted, and 36% underweight, with 11% severely wasted. These rates remain largely unchanged compared to 2015-16, signaling stagnation in progress despite interventions. Stunting begins early: even among infants under six months, 29% were already stunted and 31% wasted, underscoring poor maternal nutrition and early-life feeding practices.

Anaemia has emerged as the most widespread nutritional deficiency. NFHS-5 shows 69% of children (659 months) anaemic, along with 54% of women (1549 years) and 22% of men. Alarmingly, anaemia has increased by six percentage points since NFHS-4. The burden is particularly severe among rural households, Scheduled Tribes, and women with limited education.

Hunger and Dietary Inadequacy

Beyond anthropometric failures, Maharashtra struggles with inadequate dietary intake. Only 11% of children aged 623 months received a minimum adequate diet, placing the state among the worst performers nationally. Just 18% of children consumed food from the recommended number of groups, and only 9% met all three WHO infant and young child feeding practices (diversity, frequency, and adequacy).

Micronutrient intake is also poor: only 42% of children (623 months) consumed Vitamin A-rich foods, and 19% consumed iron-rich foods, although supplementation coverage was somewhat higher (Vitamin A: 72%; iron: 34%). These gaps in diet diversity and micronutrient intake explain the persistence of undernutrition, even when food availability is adequate at the household level. Regional disparities remain sharp: Marathwada and Vidarbha show consistently higher undernutrition, while Western Maharashtra and Konkan perform relatively better.

Obesity and Over nutrition

Alongside undernutrition, Maharashtra is experiencing a nutrition transition. NFHS-5 reports that 23% of women (1549 years) and 25% of men (1554 years) are overweight or obese, while 21% of women are too thin, showing the double burden of malnutrition.

District-level analyses reveal sharp differences: overweight/obesity prevalence among women exceeded 30% in Mumbai and Thane, but remained below 15% in tribal-dominated districts like Nandurbar and Gadchiroli.

Recent studies provide additional insights. A cross-sectional survey[19] in Akola district found [34]% of adult's obese and [18]% overweight, with prevalence highest among upper socioeconomic groups and

[18] *https://dhsprogram.com/pubs/pdf/FR[374]/FR[374]_Maharashtra.pdf*

[19] *https://www.ijcmph.com/index.php/ijc mph/article/view/[11227]/[6778]*

adults aged 3655 years. Similarly, research[20] on rural school children reported that 8.5% were overweight or obese, a strikingly high rate for non-urban Maharashtra

These findings confirm that Maharashtra faces a triple burden of malnutrition: chronic child undernutrition, widespread hidden hunger (anaemia and micronutrient deficiencies), and rapidly rising obesity in both adults and children.

3.2.2 Health Status: Maternal and Child Health, Males, and the Elderly

Malnutrition: NFHS-5 shows that Maharashtra continues to face high levels of child undernutrition with limited improvement since NFHS-4. About 35 percent of children under five are stunted, 26 percent are wasted, and 36 percent are underweight, with 11 percent severely wasted, indicating serious chronic and acute undernutrition. Stunting and wasting begin early: even among infants under six months, nearly one-third show stunting or wasting, highlighting poor maternal nutrition, low birthweight, and suboptimal early feeding practices.

Anaemia has become the most widespread nutritional deficiency. Around 69 percent of children aged 6–59 months are anaemic, as are 54 percent of women aged 15–49 years and 22 percent of men, with anaemia in children having risen by roughly six percentage points since NFHS-4. The burden is particularly severe among rural households, Scheduled Tribes, and women with lower education, reinforcing intergenerational cycles of poor health and low productivity.

Hunger and Dietary Inadequacy: Beyond anthropometric indicators, diet quality is strikingly poor. Only about 11 percent of children aged 6–23 months receive a minimum adequate diet, placing Maharashtra among the weaker performers nationally on infant and young child feeding (IYCF) indicators. Just 18 percent of children consume food from the recommended number of food groups, and only about 9 percent meet all three WHO IYCF criteria of dietary diversity, meal frequency, and adequacy.

Micronutrient intake is similarly inadequate: around 42 percent of children 6–23 months consume vitamin A–rich foods and 19 percent consume iron-rich foods, even though supplementation coverage is somewhat better, with about 72 percent receiving vitamin A and 34 percent iron supplements. These deficits explain why undernutrition persists even when aggregate food availability is adequate, and they underscore the importance of diet diversity, behaviour change communication, and better integration of agriculture and nutrition interventions. Regional disparities remain marked, with Marathwada and Vidarbha recording worse outcomes than Western Maharashtra and Konkan.

Obesity and overnutrition: Maharashtra is simultaneously experiencing a nutrition transition towards overweight and obesity. NFHS-5 reports that about 23 percent of women (15–49 years) and 25 percent of men (15–54 years) are overweight or obese, even as roughly one-fifth of women remain underweight, reflecting a pronounced double burden. District-level data and smaller studies highlight strong socio-economic gradients. Overweight and obesity among women exceed 30 percent in highly urbanised districts such as Mumbai and Thane but remain below 15 percent in tribal-dominated districts like Nandurbar and Gadchiroli. A cross-sectional survey in Akola district found around 34 percent of adults obese and 18 percent overweight, with highest prevalence among higher socio-economic groups and adults aged 36–55 years. Another study of rural school children reported overweight/obesity in roughly 8–9 percent, unusually high for non-urban Maharashtra. Together, these findings confirm that Maharashtra faces a triple burden of malnutrition: child undernutrition, widespread anaemia and micronutrient deficiencies, and rapidly rising obesity in adults and children.

[20] *https://www.researchgate.net/publication/375229931_Prevalence_of_Overweight_and_Obesity_in_Rural_School_Children_of_Maharashtra_India*

Health status: mothers, children, adults, and the elderly

NFHS-5 indicates substantial progress in maternal health service coverage, though gaps in quality, timing, and equity remain. Over nine in ten mothers receive antenatal care (ANC) from a skilled provider for their most recent birth, with the vast majority consulting doctors and a smaller share receiving care from nurses, ANMs, or midwives, while only about 5 percent report no ANC. Almost all pregnancies are registered, and a similar share of women receive a Mother and Child Protection (MCP) card, pointing to strong registration and record-keeping systems.

However, only about 71 percent of mothers have their first ANC visit in the first trimester, and roughly 70 percent complete at least four ANC visits – figures that show only modest improvement since NFHS-4. While 86 percent of women receive iron and folic acid supplements, less than half consume them for the recommended 100 days, and only around one-third for 180 days, indicating serious gaps in adherence despite high nominal coverage. Most women who receive ANC are monitored for weight, blood pressure, and basic tests, and about 90 percent undergo ultrasound, but utilisation is strongly patterned by education and gender norms, with more educated women and those without sons more likely to access such services.

Delivery care has become highly institutionalised: about 95 percent of births occur in health facilities and 94 percent are attended by skilled providers. Caesarean section rates have risen to about one-quarter of all births, with a substantial share categorised as emergency procedures, raising questions both about access and potential over-medicalisation. While schemes like Janani Suraksha Yojana provide financial support, only about 10 percent of institutional births report receiving JSY benefits, albeit with somewhat higher coverage among rural, SC, and ST women, pointing to both targeted outreach and continued gaps in financial protection.

Postnatal care coverage is high but uneven. Around 88 percent of mothers receive a postnatal check, and 86 percent are examined within two days of birth, but these services are heavily concentrated among institutional births, with only about one-third of home births receiving timely postnatal care. Male involvement is rising – most men know about ANC and are present for at least one visit – but fewer are informed about danger signs or complication management, which limits their capacity to support timely treatment-seeking.

Child health outcomes show clear progress in immunisation and service utilisation but persistent vulnerabilities in illness management and feeding practices. About 74 percent of children aged 12–23 months are fully immunised against key vaccine-preventable diseases, up sharply from 56 percent in NFHS-4, and nearly all children have received at least some vaccinations. Possession of vaccination cards has risen to 84 percent, aiding tracking and follow-up, though dropouts between initial and final doses of multi-dose vaccines remain a concern. Morbidity from common childhood illnesses remains significant: in the two weeks preceding the survey, small but important proportions of under-five children experienced acute respiratory infection, fever, or diarrhoea. Treatment-seeking is relatively high, but case management quality is uneven, particularly for diarrhoea, where ORS and zinc utilisation remains suboptimal and feeding often decreases during illness, exacerbating nutritional risks. The ICDS system continues to be a central platform for nutrition and early childhood services. A majority of children under six access at least one service from anganwadi centres, most commonly supplementary food, growth monitoring, health check-ups, and preschool education. Yet, coverage is far from universal, and utilisation by pregnant and breastfeeding women is lower than desired, highlighting missed opportunities for counselling, supplementation, and early detection of risks.

Breastfeeding practices are mixed: initiation and overall breastfeeding duration are relatively good, and exclusive breastfeeding under six months has improved, but early initiation within the first hour and avoidance of prelacteal feeds remain problematic. Complementary feeding is particularly weak, with low diet diversity and inadequate meal frequency, explaining the persistence of stunting and

wasting despite improvements in service access.

Adult health, NCDs, and financial protection

Adult health in Maharashtra is characterised by a dual burden of persistent communicable diseases and rapidly growing NCDs, overlaid on low levels of financial protection. Hypertension and diabetes show concerning prevalence among both women and men, with a sizeable share of adults having raised blood pressure or blood glucose and additional proportions on medication for these conditions. Overall, roughly 7 percent of women and 11 percent of men have diabetes or are on treatment, suggesting an expanding chronic disease burden that will intensify as the population ages.

Screening for cancers remains extremely limited: only about 2 percent of women have ever been screened for cervical cancer and 1 percent for breast or oral cancer, with even lower screening for men's oral cancers. Tobacco and alcohol use remain important risk factors – tobacco use is high among men and low among women, while alcohol use is reported by a notable minority of men and is strongly gendered and somewhat higher in urban areas.

Health insurance coverage is strikingly low. Only around one in five households report any form of health insurance for at least one member, and at the individual level, roughly 14 percent of women and 19 percent of men are covered. As a result, households remain heavily exposed to out-of-pocket costs for both acute and chronic illnesses, with serious implications for rural livelihoods, indebtedness, and the capacity to invest in productive assets.

3.2.3 Health Infrastructure, Staffing and Access

Maharashtra boasts one of the most extensive healthcare systems in India, characterized by a structured three-tier public network sub-centres, primary health centres (PHCs), community health centres (CHCs), and district hospitals augmented by urban teaching hospitals, private facilities, and specialty institutions. Yet, beneath this architectural scale lies a stark disjunction: well-equipped tertiary centers in metropolitan areas coexist with critical service gaps in rural and tribal districts, notably in regions such as Gadchiroli, Nandurbar, and Palghar. This is highlighted by CAG audit in 2024[21] detailing that the state's infrastructure continues to fall short of Indian Public Health Standards (IPHS), leaving many facilities overstretched and under-resourced.

Sub-Centres, PHCs, and Rural Hospitals

IPHS norms prescribe one Sub-Centre (SC) per 5,000 people in plain areas and 3,000 in hilly/tribal areas, one Primary Health Centre (PHC) for 20,00030,000 people, and one Community Health Centre (CHC)/Rural Hospital (RH) for 80,0001.2 lakh people. Yet, as of 202223, Maharashtra faced shortfalls of 25 percent in SCs (3,515 missing), 18 percent in PHCs (417 missing), and 37 percent in RHs (216 missing).

This shortage translates into heavy population loads:

- In 24 out of 34 districts, each SC served more than 5,000 people, in some cases as high as 7,565 (Hingoli).
- In 24 districts, one PHC served over 30,000 people, going up to 41,609 in Hingoli.
- In 30 districts, one RH covered populations above 1.2 lakh, peaking at 3.3 lakh in Hingoli.

These numbers indicate that rural and tribal districts face service access gaps, with basic facilities catering to populations well above prescribed norms.

[21] *https://cag.gov.in/uploads/download_audit_report/2024/Chapter-5-Healthcare-Infrastructure-0676d3322b77172.85867407.pdf*

District and Sub-Divisional Hospitals: Maharashtra has 36 districts, but Palghar lacked a district hospital altogether. As of May 2023, there were 21 district hospitals, 15 women's hospitals, and 8 medical college attached hospitals in 33 districts. At the sub-divisional level, 95 hospitals functioned across the state (63 with 50 beds, 32 with 100 beds).The audit revealed a 56 percent shortage of beds in 21 district hospitals compared to IPHS norms, with deficits ranging from 23 percent in Hingoli to 86 percent in Pune and Nanded. Shortfalls were especially acute in maternal and child care wards, with deficits as high as 87 percent in Gadchiroli.

In hospitals attached to medical colleges, the situation was uneven: while some exceeded sanctioned capacity, others like Baramati (Pune) faced a 58 percent shortage in paediatrics and obstetrics beds.

Implementation Gaps in Health Infrastructure Plans: The Public Health Department's Master Plan (2013-14) proposed establishing 1,264 new health facilities and upgrading 56 others by 2019. However, by September 2022, 70 percent of these projects were incomplete, and even among completed facilities, 36 percent were non-functional due to lack of sanctioned staff or equipment. Planned upgrades to increase bed capacity by 2,490 were also 90 percent incomplete.

Community and Primary Level Services: At the CHC level, most facilities had the mandated 30 beds, but several PHCs lacked the minimum six beds, with some operating with as few as two to five. This undermines their role as effective first referral points.

Systemic Challenges: The audit underscores that shortages in facilities, beds, and human resources compound each other, resulting in public health institutions catering to populations far beyond IPHS norms. Delays in executing master plans, poor maintenance, and staffing shortages further erode service quality. While tertiary care and urban centres remain comparatively better equipped, rural and tribal districts suffer from chronic underinvestment, creating inequities in access to care. Beyond infrastructure, health financing remains fragile. The CAG Audit (2024)[22] highlights significant lapses in the functioning of the Maharashtra Medical Council (MMC), the statutory body responsible for registering and monitoring Registered Medical Practitioners (RMPs). Under Section 23(c) of the MMC Act, every doctor registered with the Council is required to renew their registration every five years upon payment of renewal fees. However, audit scrutiny of MMC records between 2016-17 and 2021-22 revealed systemic weaknesses. While the State Council generally met as prescribed (except in 2017), the Executive Committee (EC) consistently failed to meet the required frequency of once every two months, indicating weak governance and oversight.

More critically, of the 1.71 lakh doctors registered as RMPs till 2021-22, the registrations of 68,665 doctors (40 percent) were pending renewal as of March 2022. Shockingly, this included 4,071 practitioners whose registrations dated back to before 1st May 1960, when Maharashtra State was first constituted. This indicates that the State Register of RMPs has not been regularly updated for decades, raising serious concerns about the accuracy of data on active practitioners.

However, according to a Lok Sabha reply (December 2024)[23], Maharashtra has the highest number of registered allopathic doctors in the country, with 2,09,540 practitioners on record with the State Medical Council and the National Medical Commission. This places the state well ahead of others in terms of sheer workforce size. While the CAG audit (2024) highlighted lower and outdated figures due to poor renewal compliance, the latest parliamentary update provides a more reliable picture of Maharashtra's doctor strength as of 2024.

[22] *https://cag.gov.in/uploads/download_audit_report/2024/Chapter-5-Healthcare-Infrastructure-0676d3322b77172.85867407.pdf*

[23] *https://sansad.in/getFile/loksabhaquestions/annex/183/AU1956_cCTPlE.pdf?source=pqals*

As of October 2023[24], Maharashtra had 992 hospitals empanelled under PM-JAY/MJPJAY, of which 79 percent were private-for-profit (796), 19 percent were public (196), and just 2 percent were private not-for-profit (16). Yet, with an estimated 6,000 private hospitals in the state, only 13 percent are empanelled, reflecting limited private sector participation in government-supported insurance schemes. The distribution of empanelled facilities is also highly uneven: half are concentrated in just nine districts, and one-third in five urbanised hubs Mumbai, Pune, Nashik, Thane, and Kolhapur. At the other extreme, 12 districts many of them least urbanised and with large tribal populations had fewer than 15 empanelled hospitals each, highlighting serious gaps in coverage for vulnerable groups. On a per capita basis, Maharashtra's density of one empanelled hospital per 100,000 eligible population falls well short of the national average of three per 100,000, with 25 out of 36 districts below even the state's low average.

These inequities compound the broader challenge of healthcare financing in Maharashtra. Only one in five households has health insurance, leaving the majority to depend on out-of-pocket spending for critical illnesses. The private sector now accounting for nearly two-thirds of the state's hospital capacity functions with weak cost regulation, often exposing patients to high medical expenses. Government efforts to expand protection include Mahatma Jyotiba Phule Jan Arogya Yojana (MJPJAY) and PM-JAY, which provide coverage of up to ₹5 lakh per family annually for secondary and tertiary care. In the past year alone, over 76,000 road accident victims benefited from state insurance support, and Maharashtra has mandated all charitable hospitals to integrate with these schemes to broaden coverage. Discussions are also underway to expand eligibility for the Employee State Insurance Scheme (ESIS) to include more informal and low-wage workers.

Despite these measures, the COVID-19 pandemic laid bare systemic weaknesses uneven ICU and oxygen availability, logistical bottlenecks, and overdependence on urban tertiary hospitals. Addressing these inequities will require accelerated completion of pending infrastructure projects, closing staffing and capacity gaps in disadvantaged regions, stronger regulation of private care, and deeper financial protection especially for rural and marginalised communities.

Implications for social capital and livelihoods

The combination of demographic change, social stratification, and health–nutrition outcomes described in this chapter has far-reaching consequences for social capital and rural livelihoods in Maharashtra. Shrinking child cohorts, a large and mobile working-age population, and rapidly rising elderly numbers are reshaping intergenerational ties, care arrangements, and the composition of local institutions.

Persistently high levels of undernutrition and anaemia among children and women constrain the development of human capital, while the spread of NCDs and low insurance coverage increase economic vulnerability, especially for poorer and marginalised groups. The differentiated experiences of SCs, STs, and migrants highlight the need to view social capital not as evenly distributed community cohesion but as a contested resource that reflects power, identity, and access to state and market institutions. Strengthening social capital in this context will require investments not only in formal organisations and local bodies but also in the underlying health, nutrition, and demographic foundations that enable communities to act collectively and adapt to risk.

3.3 Education

Education and local institutions in rural Maharashtra already provide a substantial base for human development, but persistent gaps in access, quality, equity, and institutional capacity undermine their potential to translate into inclusive livelihood gains. Strengthening outcomes will require sharper

[21] *https://pmc.ncbi.nlm.nih.gov/articles/PMC11912764/*

policy focus on foundational learning, NEP-aligned vocationalisation, gender and social inclusion in higher education and skilling, and deeper integration of CSOs, cooperatives, SHGs, FPOs, and PRIs as co-governance platforms for rural development.

School education: Maharashtra's education system has long been a structural strength, yet its benefits are unevenly distributed across geography, caste, and gender. The state's literacy rate of 82.3 percent sits above the national average, but rural–urban and gender disparities remain pronounced, especially in tribal and economically weaker regions. UDISE+ 2022-23[25] data shows a large but thinning school network: of over 1.08 lakh schools and 2.11 crore enrolments, nearly half (46.5 percent) are primary-only institutions that serve 44 percent of students, with a sharp drop in the share of upper primary, secondary, and higher secondary schools and enrolments. This structural tapering constrains progression beyond elementary education and is felt most acutely by rural girls and children from Scheduled Tribe households. Teacher deployment patterns mirror these disparities: despite an aggregate pupil–teacher ratio of 28, Maharashtra still has 7,393 single-teacher schools serving more than 1.65 lakh students, predominantly in hilly and tribal areas, alongside 129 schools with zero enrolment but posted teachers, indicating inefficient allocation.

The social composition of enrolments highlights both diversity and exclusion. OBC and General category students together account for roughly three-quarters of enrolments, while SC and ST students remain underrepresented relative to their population shares in rural Maharashtra, with tribal children facing compounded disadvantages of distance, transition barriers, and weaker infrastructure. Muslim students constitute 13.5 percent of enrolments, underscoring the importance of minority education for rural livelihoods and social mobility.

From a livelihoods lens, restricted progression to secondary and higher secondary school constrains skill-readiness, employability, and later access to vocational and higher education, particularly in regions with high ST and Muslim populations where school infrastructure and staffing are weakest.

ASER 2024[26] data confirms that government schools remain the backbone of rural education, especially at younger ages. Among children aged 7–10, more than three-quarters attend government schools, but by ages 15–16 this drops sharply: only around 22 percent remain in government schools, while more than three-quarters shift to private schools, reflecting parental perceptions of better quality and fuelling rising household expenditure often financed through borrowing or migration. Learning outcomes remain a central bottleneck: at the early grades, about a quarter of Class I children cannot recognise letters and nearly half cannot read simple words; by Class V, only about 60 percent can read a Class II text, and by Class VIII, roughly a quarter still cannot read fluently at this basic level.

Arithmetic competencies show similar deficits: only about 27 percent of Class V students can do simple division, rising to just 36 percent in Class VIII, far below age-appropriate expectations and signalling systemic foundational learning gaps. Dropout risks intensify during adolescence: while enrolment among children aged 6–14 is nearly universal, 15–16-year-olds experience higher dropout, with about 2 percent of girls and 1.8 percent of boys out of school, driven by early marriage, migration, and the costs of secondary education. These burdens fall disproportionately on rural and tribal households, where opportunity costs are high and children are drawn into agricultural or wage labour.

Regional disparities are particularly stark in tribal districts such as Nandurbar, Gadchiroli, and Palghar, which report higher absenteeism and weaker test performance than state averages. Girls tend to have slightly better enrolment and reading outcomes in younger classes, but transitions to secondary school remain fragile, with dropout pressures intensifying at adolescence. Over the last decade, trends in reading and arithmetic have been volatile: improvements up to 2018 were followed by a sharp

[25] *https://www.education.gov.in/sites/upload_files/mhrd/files/statistics-new/udise_report_existing_23_24.pdf*

[26] *https://asercentre.org/wp-content/uploads/2022/12/ASER_2024_Final-Report_13_2_24.pdf*

pandemic-era decline and only partial recovery by 2024 (for example, the share of Class III government-school children able to read a Class II text fell from 44 percent in 2018 to 26 percent in 2022 and recovered to 37 percent in 2024, still below pre-pandemic levels).

From a rural livelihoods perspective, weak foundational literacy and numeracy severely limit access to higher education, vocational skills, and non-farm jobs, reinforcing reliance on precarious agricultural labour and informal work. The uneven spread of private schooling creates a dual system: households that can afford perceived "quality education" and those confined to under-resourced government schools. Without significant improvement in rural learning outcomes, Maharashtra's demographic dividend risks being undermined by a workforce that struggles to meet the demands of a knowledge-driven economy.

Early childhood education

Early childhood education has emerged as a critical determinant of school readiness and long-term learning outcomes. NFHS-5[27] shows that 61 percent of children aged 2–4 attend preschool in Maharashtra, with no gender gap but clear socio-economic and social-group variation. Attendance is higher in rural areas (64 percent) than in urban (56 percent), reflecting the wide reach of anganwadi centres, yet children from Muslim households (49 percent) and non-SC/ST/OBC categories (57 percent) have lower preschool participation compared to SC, OBC, and ST households (62–64 percent), which may benefit more from targeted nutrition and childcare schemes.

District-level contrasts are sharp: Amravati records the highest preschool attendance (75 percent), while Palghar, with a large tribal population, lags at 47 percent, flagging significant inequities in early childhood access that likely shape later school retention and learning levels. School attendance for ages 6–17 is relatively high at 93 percent (urban 93 percent, rural 92 percent), and nearly universal (97 percent) for ages 6–14, but drops to 79 percent for adolescents aged 15–17, with a small but meaningful gender gap (78 percent girls versus 80 percent boys), suggesting that early marriage, domestic responsibilities, and cost barriers drive female dropout.

The NFHS-5 findings largely reflect a pre-COVID baseline and do not capture fully the extended school closures, digital divide, and learning losses that followed; subsequent assessments such as ASER 2022 and 2024 provide a clearer picture of pandemic-related setbacks in enrolment, dropout, and learning. For rural households, the rising costs of secondary education (fees, transport, private tuition) interact with livelihood stress, drawing adolescents into labour markets and undermining human capital accumulation.

3.3.1 Higher Education: Scale, Quality and Access

Maharashtra's higher education ecosystem is among the largest and most diversified in India, with 74 universities under AISHE 2021-22, including one Central University, seven Institutes of National Importance, 23 state public universities, 21 deemed universities, and 12 private universities. This network is complemented by 4,692 colleges, yielding about 36 colleges per lakh population in the 18–23 age group—higher than the national average—but with relatively modest average enrolment of 685 students per college, suggesting capacity and faculty constraints in many institutions.

Total student enrolment stands at 45.7 lakh, with 34.9 lakh at the undergraduate level and fewer than five percent in postgraduate diploma, diploma, and certificate programmes, reflecting continued preference for traditional degrees over vocational or short-cycle options. Maharashtra's overall Gross Enrolment Ratio (GER) in higher education is 35.3 percent (37.1 percent for males and 33.3 percent for

[27] *https://dhsprogram.com/pubs/pdf/FR374/FR374_Maharashtra.pdf*

females), significantly above the national GER of about 28 percent, yet distributional inequities persist: GER among SC students is 36.3 percent, but only 17.3 percent for ST students, indicating deep structural barriers for tribal communities.

Gender disparities remain notable. The Gender Parity Index (GPI) is 0.90 overall, indicating that women lag behind men in enrolment; the gap is narrower for SCs (0.93) but particularly wide for STs (0.78), pointing to intersecting cultural and socio-economic constraints on tribal women's participation in higher education. Quality concerns are evident in faculty and infrastructure indicators: the overall higher education pupil–teacher ratio is 27, slightly above desirable benchmarks, with more pronounced imbalances within universities (PTR around 50 in universities and constituent units versus 23 in affiliated colleges), highlighting faculty shortages, especially in state universities and rural campuses.

Regional divides also shape access. Urban centres like Pune, Mumbai, and Nagpur function as higher education hubs with dense clusters of universities and professional colleges, while rural and tribal districts have limited institutional presence, forcing students either to migrate or discontinue studies after secondary school. Affordability is a further barrier: private unaided colleges dominate the landscape, and while scholarships and targeted schemes exist, coverage remains incomplete, particularly for first-generation learners and marginalised groups.

Recent state initiatives have begun to address gender and affordability gaps—for example, Maharashtra's decision to provide 100 percent tuition and examination fee waivers for eligible girl students from EWS, SEBC, and OBC backgrounds in approved professional courses from 2024-25 onwards—but these measures need to be scaled and better aligned with livelihood-focused disciplines. Overall, Maharashtra's higher education system thus presents a paradox: high aggregate access and institutional variety coexisting with entrenched inequities by caste, gender, and geography.

3.3.2 Vocational and Skill Training

Maharashtra has made substantial investments in building a multi-layered skilling ecosystem that spans ITIs, short-term training schemes, and new-age skill centres. The state operates 419 government ITIs and 616 private ITIs, training nearly 1.5 lakh students annually, alongside short-term skilling programmes that have certified more than 8.13 lakh youth. To strengthen the rural base, 511 Pramod Mahajan Gramin Kaushalya Vikas Kendras have been launched, and 652 ITI units have been sanctioned in cutting-edge trades such as additive manufacturing, industrial robotics, IoT, EV technology, drones, and mechatronics, aligning vocational training with growth sectors like automobiles, capital goods, renewable energy, semiconductors, and aerospace.

The Maharashtra Skill Need Analysis Survey 2023, covering 1,500+ industries and over 2 lakh trainees, reveals noteworthy shifts. Youth aspirations increasingly favour IT/ITeS, BFSI, healthcare, and electronics, while industry demand remains strong in agriculture, automotive, food processing, capital goods, and logistics. At the state level, electronics, automotive, agriculture, BFSI, IT/ITeS, tourism and hospitality, capital goods, logistics, and apparel emerge as top sectors for short-term skilling, whereas gem and jewellery, leather, mining, and sports show limited demand.

Despite this extensive architecture, several structural challenges persist. Youth aspirations are heavily skewed towards graduate qualifications and white-collar roles, often misaligned with industry demand for technical and vocational skills, resulting in underemployment. Gender disparities are stark: industries report that about 93 percent of their workforce is male, underscoring systemic barriers to women's participation, while nearly two-thirds of surveyed firms do not employ persons with disabilities, reflecting exclusionary labour practices. Rural–urban divides remain marked, with industrial hubs like Pune, Mumbai, and Nashik attracting most skill-focused training and placements, while tribal and less industrialised districts such as Gadchiroli, Nandurbar, and Palghar lag in both institutional

capacity and training uptake.

For rural livelihoods, vocational and skill development is particularly important in diversifying income sources. Agriculture-linked training—such as irrigation service technicians, dairy entrepreneurship, or solar pump technicians—can enhance farm productivity and non-farm earnings, while trades like tailoring, food processing, and beauty and wellness provide viable self-employment avenues, especially for women. However, the survey indicates that candidate aspirations often exceed local absorption capacity, pushing rural youth into migration or informal work; the absence of strong rural industry linkages and localised placement systems weakens the livelihood returns to training.

National schemes like PMKVY, STRY, and related MSDE interventions, implemented in Maharashtra through the Maharashtra State Skill Development Society, further expand access to skill training, including for rural youth and farmers, but require stronger alignment with district-level economic strategies, emerging green jobs, and social inclusion targets. Maharashtra's ambition to become a USD 1 trillion economy by 2028 hinges not only on industrial growth but also on how effectively rural youth—especially women, STs, and marginalised groups—are integrated into new economic opportunities through relevant, high-quality skills.

Transforming Industrial Training Institutes (ITIs) Quality and Grading[28]

The Directorate General of Training's ITI grading framework, rolled out in phases since 2017, aims to benchmark quality and incentivise improvement through performance-based conditions on trade expansion, funding eligibility, and advanced training access. In Phase 2, grading was streamlined to 27 parameters across five categories, with geo-tagged evidence and five-year validity; only ITIs above specific grade thresholds qualify for adding trades or accessing schemes such as STRIVE, and their principals and instructors become eligible for advanced training in NSTIs and abroad.

Yet, out of 899 ITIs evaluated in Phase 2, the average grade was only 1.16, signalling systemic quality issues even as some institutions, like Government ITI Aundh and Government ITI Chinchwad, demonstrate strong performance, high occupancy, and diversified trade offerings. For rural livelihoods, this grading framework is crucial: ITIs in tribal and less industrialised districts often struggle with infrastructure, faculty, and industry linkages, which depress their grades and limit their ability to expand market-relevant trades or attract funding, while ITIs in industrial clusters perform better, reinforcing the rural–urban quality divide.

3.4 Role of Community Organizations in Livelihoods

Community organisations and civil society networks form a critical layer of Maharashtra's livelihood ecosystem, complementing state-led programmes through mobilisation, service delivery, last-mil access, and innovation. NGOs such as BAIF, WOTR, SOPPECOM, AFARM, Snehalaya, and others have contributed across watershed management, gender empowerment, livelihoods. CSOs operate alongside the state's strong cooperative tradition and women's collectives under MAVIM, UMED, and Chaitanya, working across education, health, agriculture, housing, and policy advocacy. Their interventions often pilot new ideas, mobilise marginalised groups (including tribal communities, Dalits, and women), and act as intermediaries that connect citizens to schemes, services, and entitlements. Maharashtra hosts over 61,800 active organisations[29], on platforms such as NGO Darpan, of which 3,880 focus on agriculture and animal husbandry, but registration data often overstates actual activity due to dormant or paper-only entities.

[28] *https://www.niti.gov.in/sites/default/files/2023-02/ITI_Report_02022023_0.pdf*

[29] *https://ngodarpan.gov.in//search-ngo*

Institutional forms also shape roles organizations can play in the livelihoods sector. Trusts make up around 62 percent of entities, anchoring long-duration development programmes; societies (around 25 percent) often serve as mobilisation platforms; and Section 8 companies (about 14 percent) frequently engage in market integration, FPO support, and value chain partnerships. This layered structure creates an ecosystem where grassroots NGOs, movement-based organisations, and CSR-backed entities coexist, underpinning livelihood enhancement and social capital beyond government frameworks.

According to data from Govt website[30], CSR spending in Maharashtra has grown substantially over the past decade, rising from around ₹1,445 crore in FY 2014-15 to over ₹6,065 crore in FY 2023-24, reflecting both regulatory enforcement under the Companies Act 2013 and the state's prominence as an industrial hub. Sectoral patterns show strong CSR concentration in education, livelihoods, and support for persons with disabilities (together about ₹2,602.92 crore in FY 2023-24), followed by health, nutrition, and poverty eradication (₹1,955.11 crore), while environmental causes, gender equality and women's empowerment, rural development, and other areas receive smaller but significant allocations. This suggests that CSR is becoming an important co-financing source for human capital, social infrastructure, and livelihood initiatives, even as it plays a dual role in addressing service gaps and enhancing corporate accountability.

3.4.1 Panchayati Raj Institutions

Table 60 Status of PRI over the decades in Maharashtra

	1960-61	1980-81	1990-91	2000-01	2010-11	2020-21	2022-2023
Zilla Parishads	25	25	29	33	33	34	34
Gram Panchayats	21,636	24,281	25,827	27,735	27,913	27,832	27,913
Panchayat Samitees	295	296	298	321	351	351	351
Municipal Councils	219	220	228	228	222	241	246
Municipal Corporations	3	5	11	15	23	27	29
Nagar Panchayat	–	–	–	3	4	128	146
Cantonment Boards	7	7	7	7	7	7	7

Source: Economic Survey of Maharashtra 2024-25, As per State Election Commission (As on 31.10.2023)

As in 2022-23, Maharashtra had 27,913 GPs for 43,665 villages of which 2,706 villages are unhabituated. The sanctioned strength of VDOs/Gram Sevaks stood at 22,793, but only 20,546 were in position, leaving a shortage of 2,247 posts (10 per cent). Gram Sevaks function as secretaries to GPs, maintaining accounts and records at the village level. At the district level, 34 ZPs (excluding Mumbai City and Suburban districts) administer key departments such as education, health, public works, irrigation, social welfare, and agriculture. ZPs also implement Government of India (GoI) and state schemes through District Rural Development Agencies (DRDAs), while retaining limited taxation powers including water tax, pilgrim tax, and special taxes on land and buildings.

[30] *https://www.csr.gov.in/content/csr/global/master/home/ExploreCsrData/dynamic-csr-report-search.html*

At the intermediate tier, Maharashtra had 351 Panchayat Samitis (PSs), which largely depend on grants from ZPs as they lack substantial independent revenue sources. At the base tier, the Gram Sabha, composed of registered voters of the village, is empowered under the Maharashtra Village Panchayat (MVP) Act, 1958, to levy taxes (on buildings, fairs, vehicles, shops, etc.), approve development plans, select scheme beneficiaries, and authorize expenditure.

Table 61 Receipts and Expenditure of PRIs in Maharashtra (2017-18 to 2021-22) in crores

Maharashtra follows a three-tier Panchayati Raj system comprising Zilla Parishads at district level,

Description	2017-18	2018-19	2019-20	2020-21	2021-22
Own revenue	707.61	621.67	637.68	454.36	427.41
Grants (GoM)	16,948.36	17,088.89	20,217.07	19,405.85	14,304.79
13th FC	7.09	0.02	0.47	0.36	0.11
14th FC	1,164.99	1,110.26	1,349.99	92.58	4.07
15th FC	0	0	0	2,144.24	1,180.76
Other GoI grants	324.47	292.71	265.74	333.47	79.84
Other receipts	251.15	766.31	229.74	403.53	997.42
Total receipts	19,403.67	19,879.86	22,700.69	22,834.39	16,994.40
% Own revenue	3.65	3.13	2.81	2.00	2.52
Expenditure	17,897.97	18,434.16	21,786.37	21,078.77	15,514.20

Panchayat Samitis at block level, and Gram Panchayats at village level, with the Rural Development and Panchayat Raj Department as the nodal authority. As of 2022-23, the state had 27,913 Gram Panchayats serving 43,665 villages, of which around 2,706 are uninhabited. The sanctioned strength of Village Development Officers/Gram Sevaks was 22,793, with 20,546 in position, leaving a 10 percent vacancy that can impede local planning and implementation. ZPs administer key departments (education, health, public works, irrigation, social welfare, agriculture) and implement central and state schemes via DRDAs, while retaining limited taxation powers; PSs mainly depend on ZP grants, and Gram Sabhas hold statutory authority under the Maharashtra Village Panchayat Act to levy certain taxes, approve development plans, select beneficiaries, and authorise expenditure.

Financially, PRIs rely heavily on grants rather than own revenues. Between 2017-18 and 2021-22, own revenues fell as a proportion of total receipts from 3.65 percent to around 2–3 percent, with GoM grants and Finance Commission allocations constituting the bulk of PRI finances. In 2021-22, PRIs were allocated ₹29,417.83 crore—about 12.25 percent of Maharashtra's total revenue receipts—highlighting both the scale of resources and the importance of strengthening local fiscal capacity and accountability.

GPDPs and participatory planning

The 73rd Constitutional Amendment mandates Gram Panchayats to prepare plans for economic development and social justice, operationalised through Gram Panchayat Development Plans that integrate local priorities with resources from central, state, and local schemes. Revised MoPR guidelines (2018) emphasise inclusive Gram Sabha-based planning, use of participatory tools, convergence across schemes (MGNREGS, NRLM, Swachh Bharat, etc.), and alignment with the 29 Eleventh Schedule subjects and SDGs.

Maharashtra operationalised this framework through "Amcha Gaon Amcha Vikas" in 2015, issuing state-specific GPDP guidelines that stress local resource assessment, community participation, and integration of state schemes, while aligning with the national "Sabki Yojana, Sabka Vikas" campaign. A three-tier support system includes State Resource Teams for training and policy guidance, district-level committees chaired by ZP CEOs for execution and monitoring, and block-level technical scrutiny committees chaired by BDOs for appraising plans; at the GP level, Gram Panchayat Planning Facilitation Teams and ward-level sub-teams support inclusive planning.

The GPDP process follows a cyclical approach: mobilisation and awareness-building, data collection (household surveys, PRA, focus groups), situation analysis and gap identification, visioning and goal setting for five-year perspective plans, resource mapping, draft preparation and Gram Sabha approval, followed by implementation, monitoring, and social audit. Annual action plans are derived from five-year plans, prioritising urgent needs and available funds, and are scrutinised at block and district levels.

However, several hurdles persist. Technical expertise in cost estimation and project design is often lacking at GP level, inter-departmental coordination remains weak, planning sometimes coincides with peak agricultural seasons (reducing participation), and GPDPs tend to focus on infrastructure rather than productive sectors such as agriculture, livestock, and skill development. Inconsistent capacity building and limited use of digital planning tools (PlanPlus, PRIASoft, GIS) further constrain quality, and people's participation—especially of women, youth, and marginalised groups—remains uneven.

At the same time, GPDPs offer significant opportunities to localise SDGs, integrate social, economic, and ecological priorities, and deepen convergence between PRIs and SHGs, FPOs, and CSOs. If backed by robust technical support, transparent data systems, and meaningful community participation, GPDPs can become powerful instruments to embed livelihood-enhancing activities in local development plans, including agriculture, livestock, skills, and climate resilience.

Policy levers for PRIs and GPDPs

- Strengthen PRI human resources by filling Gram Sevak and technical vacancies, forming block-level resource pools (engineers, planners, livelihoods experts), and leveraging SHG/federation and CSO networks as community facilitators in planning and social audit.
- Make livelihoods and human development central to GPDPs by mandating inclusion of agriculture, NRM, skills, and social sector actions, and by linking performance grants to outcome indicators such as school retention, foundational learning, women's collective enterprises, and water security.
- Institutionalise convergence platforms at GP and block levels that regularly bring together line departments, PRIs, SHG federations, FPOs, and CSOs to plan, budget, and review joint interventions, using digital tools (PlanPlus, PRIASoft, GIS dashboards) for transparency and monitoring.
- Localise SDGs by developing simple, GP-level indicator sets (education, nutrition, livelihoods, climate resilience), drawing data from line departments and community monitoring, and integrating these into annual GPDP reviews and public disclosure.

3.4.2 Cooperatives, Self-Help Groups (SHGs), and Farmer Producer Organisations (FPOs)

Table 62 Overall Cooperatives in Maharashtra

Category	Rural	Urban	Total
Functional	68,350	148,917	217,267
Non-Functional/Dormant	1,376	1,645	3,021
Under Liquidation	2,469	1,388	3,857
Total Societies	72,195	151,950	224,145

Source: https://cooperatives.gov.in/

Table 63 Functional Primary Cooperatives in Rural Maharashtra

Type of Cooperative (Rural)	Number of Functional Societies
Agriculture & Allied Cooperative	2,878
Agro Processing / Industrial Cooperative	1,948
Bee Farming Cooperative	1
Consumer Cooperative	430
Credit & Thrift Society	7,201
Dairy Cooperative	11,908
Educational & Training Cooperative	18
Farmers Service Societies (FSS)	7
Fishery Cooperative	2,650
Handicraft Cooperative	2
Handloom Textile & Weavers Cooperative	100
Housing Cooperative Society	8,126
Jute and Coir Cooperative	1
Labour Cooperative	6,750
Large Area Multipurpose Society (LAMPS)	45
Livestock & Poultry Cooperative	298
Marketing Cooperative Society	921
Miscellaneous Credit Cooperative Society	48
Miscellaneous Non Credit Cooperative Society	2,706
Multipurpose Cooperative	1,843
Primary Agricultural Credit Society (PACS)	20,001
Sericulture Cooperative	1
Social Welfare & Cultural Cooperative	99
Sugar Mills Cooperative	83
Tourism Cooperative	87
Transport Cooperative	106
Tribal-SC/ST Cooperative	9
Urban Cooperative Bank (UCB)	44
Women Welfare Cooperative Society	39
Total	68,350

Table 64 District Wise Distribution of highest and lowest functional rural Cooperatives in Maharashtra

Region / Districts	Functional Cooperatives	Observations
Kolhapur	11,664	Stronghold of cooperatives, legacy in sugar, dairy, and credit institutions
Pune	7,264	Major cooperative hub in western Maharashtra
Solapur	3,499	Prominent presence, strong in sugar and finance
Sangli	3,002	Established cooperative base, especially in agriculture and dairy
Nashik	2,905	Moderate spread, significant in agri-marketing and housing
Raigad	2,716	Cooperative institutions supporting rural finance and services
Gadchiroli	413	Low presence, tribal-dominated and underdeveloped region
Nandurbar	516	Sparse network, reflecting tribal and backward area challenges
Wardha	589	Weak cooperative penetration despite agricultural base
Hingoli	643	Limited cooperative structures, underdeveloped district
Yavatmal	106	Very low presence, acute regional disparity

Maharashtra's dense ecosystem of cooperatives, SHGs, and FPOs constitutes one of the strongest institutional bases for rural livelihoods in India, but their contribution remains uneven across regions and social groups, with significant gaps in tribal belts, minority inclusion, and enterprise depth that require targeted policy correction. The state now needs to shift from expansion of numbers to strengthening quality, governance, aggregation, and market integration, while deliberately using these institutions as vehicles for inclusion, climate resilience, and women's economic empowerment.

Cooperatives: Scale, Patterns, and Gaps

Maharashtra is widely recognized as the cradle of India's cooperative movement, with over 2.24 lakh registered cooperative societies and around 2.17 lakh reported as functional[32] across rural and urban areas. This network spans agriculture, credit, housing, dairy, fisheries, labour, and social welfare, embedding collective enterprise deeply into the state's socio-economic fabric.At the rural level, PACS form the backbone of cooperative finance, with more than 20,000 functional societies providing credit to small and marginal farmers and anchoring the agricultural credit architecture. Alongside PACS, 11,908 dairy cooperatives enable grassroots participation in the milk economy, 6,750 labour cooperatives provide employment in construction and services, and 2,650 fishery cooperatives in coastal belts play a vital role in storage, processing, and market access for fisher households. Housing cooperatives (8,126 in rural areas) and 298 livestock and poultry societies further illustrate the breadth of sectors covered under the cooperative model.

In urban Maharashtra, nearly 1.5 lakh functional societies are concentrated in housing and credit, shaping the economic life of middle- and working-class households and influencing real estate development, savings, and access to credit. The cooperative sugar mills (83 functional units) and 1,948 agro-processing cooperatives remain important nodes in state politics and the agro-industrial economy, despite recent pressures on viability and governance.

However, the cooperative system also displays clear signs of stress. About 3,021 societies (1.3 percent) are dormant and 3,857 (1.7 percent) are under liquidation, indicating governance deficits, weak business models, and competition from private finance and housing providers, especially in urban areas. The institutional architecture is overseen by the Commissioner for Cooperation &

[32] *https://cooperatives.gov.in/*

Registrar of Cooperative Societies (CC & RCS), Pune, under the Department of Cooperation, Marketing and Textiles, administering the Maharashtra Cooperative Societies Act, 1960, the APMC Act, and money-lending and warehousing legislation, which together provide a robust but often complex regulatory environment.

Spatial Inequalities in Rural Cooperatives

The district-wise distribution of functional rural cooperatives reveals a highly uneven institutional landscape. Kolhapur (11,664 cooperatives) and Pune (7,264) stand out as historic strongholds, reflecting entrenched cooperative traditions in sugar, dairy, and credit in western Maharashtra. Other relatively well-served districts include Solapur (3,499), Sangli (3,002), Nashik (2,905), and Raigad (2,716), where cooperatives are central to rural finance, agricultural marketing, and housing.

By contrast, tribal and less developed districts show a very sparse cooperative presence: Gadchiroli (413), Nandurbar (516), Wardha (589), Hingoli (643), and particularly Yavatmal (106) illustrate stark regional disparities in institutional density and access to cooperative services. This pattern mirrors broader regional inequalities: cooperative development has clustered in prosperous, irrigated, and politically connected belts, leaving tribal, rainfed, and backward regions with limited access to cooperative credit, marketing, and risk-sharing mechanisms.

Self-Help Groups: Scale, Inclusion, and Financial Deepening

Table 65 SHG Scale and social composition Source: https://nrlm.gov.in/

Indicator	Number
Total SHGs	6,23,547
SC members	8,45,616
ST members	9,37,588
Minority members	2,38,314
Other members	40,60,051
Total members	60,81,569
Persons with Disabilities (PWD) members	1,17,650

Table 66 SHG Shares & group size

Share / Ratio	Value
SC share of members	13.9%
ST share of members	15.4%
Minority share of members	3.9%
“Other” share of members	66.8%
SC+ST combined	29.3%
PWDs among members	1.93%
Average members per SHG	~9.8

Maharashtra's SHG network has grown into a statewide women's institutional infrastructure. NRLM MIS indicates 6.23 lakh SHGs with 60.8 lakh women members, placing the state among the national leaders in SHG penetration. The social composition of membership underscores SHGs' role in inclusion: 8.45 lakh SC and 9.37 lakh ST members together constitute about 29.3 percent of total membership, broadly aligning with their demographic share and mitigating the risk of elite capture.

Minority women account for 2.38 lakh members (3.9 percent), while the "others" category (mainly OBC and general caste groups) includes 40.6 lakh members (66.8 percent), signalling that SHGs have evolved from targeted poverty groups into broad-based women's platforms that cut across social strata. The inclusion of 1.17 lakh persons with disabilities (1.93 percent of total members) is particularly significant, given their low representation in most community organisations. Research across multiple states finds that disadvantaged caste members are now just as likely as others to be elected as SHG leaders and in federations.[33] and this representation increases their participation and access to group benefits[34].

The average SHG size in Maharashtra, at roughly 9.8 members, is slightly below the usual norm of 10–12. Smaller groups may foster stronger cohesion and easier decision-making but can limit aggregate savings and internal lending capacity, thereby constraining the volume of credit available for livelihoods unless supported quickly by federation-level and bank finance.

SHG–Bank Linkage and Enterprise Potential: SHG–bank linkage remains a cornerstone of livelihood finance. Banks such as Bank of Maharashtra provide working capital (cash credit) and term loans to SHGs formed under NRLM and other recognised agencies, generally with flexible repayment periods aligned to the activity and cash flows and without heavy collateral requirements. Access to repeat and higher loans is contingent on repayment discipline and group quality, reinforcing the importance of strong book-keeping and internal governance.

Field evidence, such as SHG experiences in Sindhudurg, shows that when book-keeping is rigorous and market access is established, groups can maintain high repayment rates (95–99 percent) even in adverse seasons, especially when they adopt innovations like phased disbursals linked to procurement cycles, small revolving working-capital lines, and regular cash-flow planning. Similarly, SHGs and savings-credit societies in forest-fringe areas of Satara demonstrate that when linked with cooperative discipline, cold storage, and aggregation infrastructure, even minor forest produce and small crops can be converted into more stable cash flows through collective grading, packaging, and transparent price discovery.

Yet, access remains uneven. SHGs in remote tribal districts frequently face delays and hesitancy from branch staff, more complex paperwork, and weaker linkage to enterprise opportunities, constraining the transformation from savings groups into dynamic livelihood enterprises.

Case Study — SHG Loans that Stick to Business Cashflows

Section	Details
Setting	District: Sindhudurg • SHGs across all talukas; regular meets, savings, books in order; ~95–99% on-time repayment.
Challenge	Part of enterprise loans gets diverted to consumption (house repairs, fees, and appliances), starving working capital and breaking stock cycles.
What was observed	Groups with book-keeping discipline + market access hold the line on repayment even in bad seasons; members themselves proposed phased disbursals, small revolving WC lines, and mentoring on stock-cycle planning.
Enablers that worked	UMED/NRLM scaffolding; Chetana Mahila Vikas Kendra (governance, financial literacy, internal lending, enterprise skills); bank linkages; peer monitoring.
Replicable levers	Phase loan tranches to procurement cycles; add WC cash-credit features to SHG/JLG; monthly cash-flow check-ins; simple "use-of-funds" ledgers; fast top-ups for proven repayment.

[33] *https://www.ideasforindia.in/topics/social-identity/caste-based-differences-in-self-help-groups-evidence-from-a-rural-livelihood-programme.html:~:text=Since%20its%20inception%2C%20the%20NRLM,off%20members%20in%20 the%20group*

[34] *Ibid*

Table 67 Bank linkage key terms (Bank of Maharashtra, SHG financing)

Feature	Explanation
Eligible borrowers	SHGs formed under NRLM/other recognized agencies
Loan types	Working Capital (Cash Credit) & Term Loan
Repayment	35 years depending on activity and cash flow
Security / margin	As per Bank's guidelines (no blanket collateral mentioned on the product page)
Other conditions	Standard KYC/assessment; bank linkage through SHG account

Case Study — Cooperatives Turn Forest & Minor Crops into Cash

Section	Details
Setting	District: Satara • Locations: Katkari and forest-fringe settlements; network built by Shramjivi Sanstha across fisherfolk, forest workers, and producers of bamboo, ragi (nachni), varai, karvanda, jambhul, papad.
Challenge	Dispersed producers of minor crops/forest goods face thin bargaining power and irregular cash; grading/packaging is inconsistent and first-mile finance is scarce.
What was observed	Savings/credit societies + SHGs now function as working cooperatives, converting small processing and aggregation into steadier cash. District yards + cold storage create headroom for cluster value-addition when standards exist.
Enablers that worked	Cooperative discipline (regular meetings, records), SHG liquidity, access to yards/cold rooms, and basic processing know-how.
Replicable levers	Standard grade/pack SOPs and labels; weekly aggregation days at yards; small working-capital lines for batch buys; collective marketing with transparent price boards.

Farmer Producer Organisations: Scale without Depth

Maharashtra is one of India's most prominent FPO states, accounting for the largest number of registered FPOs nationally and roughly one-third of all FPOs in the country according to national databases.[35] [36] Recent analyses suggest that thousands of FPOs are registered in the state, reflecting both the legacy of cooperatives and active promotion under schemes led by NABARD, SFAC, DAY-NRLM, and various CSR and NGO initiatives.

The state ranks near the top in national Ease of Doing Business indices for FPOs, with strong enabling factors such as relatively streamlined registration and an active state-level producer company, MahaFPC, which aggregates over a hundred FPOs for MSP procurement, aggregation, and marketing. MahaFPC's role as a State Level Producer Company is distinctive, as it moves beyond facilitation into actual market engagement, providing small FPOs with credibility and scale in dealings with banks and buyers.

Despite this institutional strength, most FPOs remain shallow in terms of capital and business operations. National data show that a large majority of FPOs across India have paid-up capital below ₹₹1 lakh, and only a small fraction exceed ₹50 lakh; Maharashtra mirrors this pattern, with most FPOs reliant on small member contributions and project grants. Insufficient capitalisation restricts their ability to invest in infrastructure, manage price risk, or withstand market shocks, while compliance burdens, taxation issues, and shortage of professional managers further constrain performance.

[35] *https://cdn-us-06.visual-paradigm.com/node/on/w/jqrifwwd/rest/diagrams/assets/324cfe89-70dd-4891-9de5-d6f4e5326ee1/SOFPO%20Report%202023.pdf*

[36] *https://www.nafpo.in/wp-content/uploads/2024/12/FPO-Report-Compendium-2021-2024.pdf*

The sectoral profile is also skewed. Over 96 percent of FPOs nationally are engaged in farm-based activities (crop cultivation, horticulture, allied services), and Maharashtra is no exception, with FPO portfolios dominated by staples, cotton, pulses, and horticultural crops in Vidarbha, Marathwada, and Western Maharashtra. Non-farm and allied FPOs (dairy, fisheries, services, crafts) remain few, limiting diversification and risk-spreading, even though the state's agro-climatic diversity and agro-processing base offer clear opportunities in high-value horticulture, spices, and processed foods.

By moving from a focus on the sheer number of groups and societies to the quality, inclusiveness, and resilience of these institutions, Maharashtra can convert its historic strengths in cooperatives and its large SHG and FPO base into a more equitable, shock-resilient rural livelihood system that reaches women, SC/ST communities, minorities, and smallholders in every district.

4 STATUS OF AGRICULTURE AND ALLIED SECTORS IN MAHARASHTRA

4.1 Introduction

Agriculture and allied activities remain the backbone of rural livelihoods in Maharashtra, even as the structure of the State economy has changed. More than half of the population continues to depend on farming and allied occupations for income and food security. Over the long arc from 1960 to the present, State Income has expanded rapidly and agriculture with allied activities has grown in absolute terms, yet the composition within the primary sector has shifted. Within agriculture, allied activities have gained importance as reliable buffers against production volatility in crops. This shift is visible in recent growth patterns where livestock, forestry and fishing have outperformed crop agriculture in several years. The allied sector has also become central to the resilience agenda because it provides shorter cash cycles, diversified revenue streams and labour-intensive opportunities for smallholders, women and landless workers.

4.1.1 Structure and Recent Growth

Advance estimates indicate that in 2024 to 2025 the State economy is expected to grow by 7.3 percent, with real Gross State Value Added in agriculture and allied activities expected to rise by 8.7 percent, industry by 4.9 percent and services by 7.8 percent. This follows a period in which allied activities have often led the primary sector. At constant prices the agriculture and allied sector grew by 3.3 percent in 2023 to 2024. The crop sub sector expanded by 0.3 percent, while livestock grew by 7.0 percent, forestry and logging by 7.6 percent, and fishing and aquaculture by 20.0 percent. The contrast with earlier years is instructive. In 2018 to 2019 crop value added contracted, while livestock and forestry continued to grow. The message is clear. Diversification toward allied activities has moderated income shocks from weather and market volatility.

The State received 116.8 percent of normal rainfall during the 2024 monsoon. The distribution was uneven, with 203 talukas receiving excess rain, 68 normal and 84 deficient. Such spatial variability underlines the role of allied activities as risk management instruments. Structural factors amplify this need. The average operational holding has fallen to 1.23 hectares according to provisional results from the Agriculture Census 2021 to 2022, compared with 4.28 hectares in 1970 to 1971. Small and marginal holdings of up to 2 hectares now constitute 84.5 percent of all holdings and 54.5 percent of operated area. For these households, allied activities that generate regular cash flow and fit within small land parcels or common resources can be decisive.

Economic Survey for Maharashtra 2024-25 indicate that agriculture & allied activities are expected to grow by 8.7%. Kharif sowing area registered at 157.59 lakh hectares. On the output front kharif, production of cereals, pulses, oilseeds and cotton is projected to increase significantly by 49.2%, 48.1%, 26.9% and 10.8% respectively (versus previous periods). The allied activities beyond crops especially animal husbandry have received a major boost. The state government has granted “agriculture-equivalent” status to livestock and poultry farming during 2025. This means livestock-based farmers get access to similar benefits as crop-farmers: subsidies (e.g. solar equipment), lower electricity tariffs, uniform taxes under gram-panchayat, subsidised interest on loans, etc. This policy

shift is important because animal-based produce contributes a significant portion of the state's agri-sector revenue.

After a relatively weak period of 2023-24, the season of 2024–25 has seen renewed vigour, strong sowing, robust output projections, and expansion beyond traditional cropping to allied activities. The key challenges of the sector include seasonal variabilities in production of cereals, pulses, oilseeds, cotton and sugarcane. The allied-agriculture sectors like livestock and fishery had structural disadvantages e.g. livestock and fishery farming was not treated on par with crop farming that limited incentives and investment in sectors like dairy, poultry, small ruminants. Even though the state shows aggregate growth, the agricultural incomes and small-farmer welfare remain uneven. Crop yield volatility, price fluctuations, input costs, and fragmented land holdings. The benefits of the allied-status scheme may take time to percolate fully. The small borrowers must get credit, subsidies, infrastructure, and outreach to really gain.

4.2 Crop Sectors

The 2024–25 kharif season show a significant rise in food grain production increase by about 29% from the previous year due to favourable monsoon rains. Soybean, maize, cotton and oilseeds recorded higher production compared to last season. Rabi crop sowing trends show about 40% drop in total rabi acreage early in the season due to delayed harvest and excess rain). However, for some crops like wheat, maize, and chana shows rabi acreage up by about 7% year-on-year although still below long-term averages.

4.2.1 Weather Impacts & Crop Damage

Across multiple reports, excessive rainfall and floods have severely impacted standing crops with nearly 6 million hectares of soybean & sugarcane were damaged by prolonged rains and floods. It was also reported that about 14.44 lakh hectares of crops damaged due to intense rainfall events. Tur a major pulse crop accounted for about 40% production loss due to rain/flood damage.

4.2.2 Market & Price Challenges

In some areas where farmers hit by erratic rains have received support through NAFED procurement at MSP prices to avoid distress sales for soybeans. There was also a demand from sugar sector to raise sugar prices to support growers and the struggling sugar sector.

4.2.3 Social & Economic Stress

Maharashtra saw the highest farmer distress with 38% of suicides in India during 2023 underscoring economic stress in the crop sector. Sugar Sector Competitiveness has declined with sugar recovery rate of about 8.25% is lagging behind leaders like Uttar Pradesh, affecting profitability for cane growers and mills.

4.2.4 Government & Policy Measures

The Govt of Maharashtra announced a historic relief package ₹₹31,628 crore to compensate farmers for flood-related crop losses and restore damaged farmland. The state is adopting satellite imagery (NDVI) for faster and precise crop damage assessment to improve compensation and insurance payouts. Crop insurance schemes (like Pradhan Mantri Fasal Bima Yojana) are increasingly integrated with mobile and WhatsApp tools to help farmers check claims/coverage status easily.

4.3 Horticulture sector

4.3.1 Area & Crop Composition:

The total area under horticulture was approximately 21–25 lakh hectares in the state during 2023–2025. Fruit cultivation area is significant with main fruits include mango, pomegranate, grapes, banana, oranges. Vegetables constitute another big portion, with onion being the dominant crop, followed by tomato and green chilli. More recent provisional data suggests that fruit plantation area increased to around 14 lakh ha in 2024–25, up by over 68,000 ha compared to the previous year, driven by fruits like mango, pomegranate, guava, lemon, custard apple and coconut.

4.3.2 Production Trends

The overall fruit output for Maharashtra is among the highest in recent years, with data showing increase in fruit production in 2025 compared to 2024. Plantation production figures is fluctuating on year to year, indicate changes in total plantation output. In general, Maharashtra is known as one of India's leading horticulture producers and contributes substantially to both domestic supply and exports of fruits and vegetables.

4.3.3 Major Crops & Regional Strengths

Mango, pomegranate, grapes, onion are some of the highest-area/production horticulture crops. Regions like Nashik, Pune, and Amravati divisions show strong expansion in fruit plantations.

4.3.4 Government Support & Policies

Maharashtra's horticulture growth is backed by several state and central schemes. Financial assistance programs like the Bhausaheb Fundkar Falbagh Lavgad Scheme have supported tens of thousands of farmers to adopt fruit cultivation. National horticulture missions and state boards aim to improve production, marketing linkages, technology adoption such as micro-irrigation, and post-harvest management. Centre and state commitments including investment announcements for horticulture facilities e.g., clean plant centres are designed to boost crop health and productivity.

4.3.5 Economic & Employment Impact

Horticulture is a key driver of rural employment and farmer income in Maharashtra, offering higher returns compared to many traditional field crops. The sector also contributes significantly to the state's agricultural export basket, especially in fruits, vegetables, and flowers.

4.4 Sericulture and Rural Industry

Sericulture generates year-round employment, particularly empowering women-led household enterprises. Mulberry cultivation spans 24 districts, with area expanding from 13,872 hectares in 2022–2023 to 18,608 hectares in 2023–2024 and 21,029 hectares up to November 2024; beneficiary farmers grew from 13,367 to 17,521 and 19,528. Cocoon production hit 4,903 metric tonnes in 2023–2024, yielding 754.26 metric tonnes of raw silk. Tussar development in Bhandara, Chandrapur, Gadchiroli, and Gondia covers 18,866 hectares of host trees; raw tussar silk output reached 182.79 lakh in 2023–2024 and 44.18 lakh up to November 2024. These outcomes affirm sericulture's viability for an integrated ecosystem spanning plantation, rearing, reeling, and weaving.

Maharashtra has advanced toward a diversified primary sector, positioning allied activities as growth engines and resilience buffers. Investments in institutions, infrastructure, and programmes address genetics, health, feed, processing, and markets, acknowledging that smallholder livelihoods thrive on portfolios yielding milk, meat, eggs, fish, and silk across seasons. Future phases must consolidate productivity, bridge nutrition and market gaps, and enhance inclusion to bolster rural incomes, women's labour, and food security statewide.

4.5 Livestock Sector

4.5.1 Preamble

The 2025 decision to grant "agriculture-equivalent" status to livestock, poultry, fish, rural-livestock operations is a major structural reform in Maharashtra's agri policy. Over 60 lakh families in the state are engaged in animal-husbandry in various forms (cattle, poultry, goats etc.). The reform aims to provide these families comparable benefits to crop-farmers (subsidies, lower rates, easier credit), which could widen rural income base beyond just crop cultivation. This kind of diversification combining cropping + livestock reduces risk for rural households and could improve resilience over time, hence, livestock sector is gaining more importance, and if implemented well, could transform rural livelihoods beyond traditional farming.

4.5.2 Livestock Population & Trends

As per the 20th national livestock census, Maharashtra has a large livestock base around 1.9 crore animals including cattle and buffaloes. However, there have been recent local observations of declining livestock numbers in certain districts, with factors like fodder/water scarcity, unprofitable milk prices and reduced farmer interest cited as reasons for drop in numbers.

4.5.3 Production & Output

According to state economic data, Maharashtra is among the top milk producers in India, ranking sixth nationally in milk output. Per capita milk availability in the state is somewhat lower than the national average. The state also ranks high in meat production (third nationally) and has significant egg output, though per capita availability trails national figures.

4.5.4 Government Policies & Reforms

In a landmark policy shift in 2025, the Maharashtra government granted agricultural status to livestock and poultry farming, effectively equating animal husbandry with crop farming. This is one of the first such moves in India. This means a Livestock farmer (dairy, poultry, small ruminants, etc.) qualify for agricultural electricity tariffs, Subsidies on solar equipment and reduced gram panchayat taxes, interest subvention on loans and priority credit similar to crop farmers. These benefits aim to reduce input costs, improve access to credit, and enhance profitability for rural families.

4.5.5 Support Schemes & Institutional Programs

Maharashtra participates in national livestock health schemes offering vaccinations and disease control. Under missions like Rashtriya Gokul and National Livestock Mission, the state promotes genetic improvement, fodder cultivation, and entrepreneur support. Livestock farmers are increasingly included in credit access schemes.

4.5.6 Key Challenges

Resource & Productivity Constraints: Fodder and water shortages continue to stress livestock rearing, particularly during droughts or after floods. There is declining rural interest in livestock farming in some areas due to lower returns and rising costs.

Regulatory & Market Issues: Cow preservation laws and bans on slaughter affect cattle markets and trade dynamics, sometimes disrupting rural markets. Occasional trade disruptions have impacted meat markets and rural incomes.

Infrastructure Gaps: Veterinary services and disease control infrastructure (clinics, labs) vary by district, which can affect herd health outcomes

4.5.7 Part of Rural Economy

The livestock sector in Maharashtra remains a vital part of the rural economy, supporting millions of households through dairy, poultry, meat and animal-related livelihoods. Recent reforms like agricultural status for livestock farming are designed to modernize the sector and improve profitability and credit access. Despite strengths in production and institutional support, resource limitations, market disruptions and implementation challenges persist, requiring continued policy attention.

4.5.8 Economic Role & Contribution

Agriculture including allied activities remains a meaningful part of Maharashtra's economy in 2024-25, while the overall state economy (GSDP) is estimated to grow at 7.3%, the agri & allied sector growing at 8.7% shows that agriculture is still a key engine. Given that agriculture is often more seasonal and climate-sensitive, this relative outperformance suggests good monsoon or favourable growing conditions, along with possibly better input management or policy support this year. Risks & uncertainties like below-normal monsoon and heatwaves in parts of India (and likely some parts of Maharashtra) slowed growth in FY24. Agricultural outcomes remain vulnerable to weather (monsoon, drought), input costs (fertilisers, labour), and market/pricing uncertainties which could still impact farmer incomes despite aggregate growth

Exemplar - Poultry & Goats Outpace Dairy without Fodder and Chilling

Section	Details
Setting	District: Yavatmal — allied activity presence with modest aggregates (eggs ≈ 52/person/year; milk ≈ 192 g/day; fish ≈ 3,752 MT).
Challenge	Dairy underperforms due to gaps in training, housing, fodder, and market/chilling; households prefer backyard poultry and small ruminants for easier cash cycles.
What was observed	Goats/poultry provide frequent, small cash; dairy sales are irregular without chilling and fodder support; credit linkages to sheds/fodder/working capital are weak.
Enablers that worked	SHG/JLG credit for birds/young stock; informal fodder networks; basic animal health days; FPO coordination improves access to inputs/insurance.
Replicable levers	Package finance (animal + shed + fodder + WC); micro-chillers at cluster points; pashusakhi network; fodder crop demos and silage pits; assured weekly milk routes with on-time payment incentives.

Exemplar — Integrator-Backed Poultry Turns Migration into Enterprise

Section	Details
Setting	District: Solapur — Return-migrant couple establishing a 6,000-bird broiler unit with a private integrator.
Challenge	Re-entry needs working capital, technical support, and risk cover; labour at ₹600/day x 4 and input volatility can wipe thin margins.
What was observed	Integrator supplies feed + meds; entrepreneurs manage shed, water, labour, insurance. ~5 cycles/year (45-day) plus manure sales (₹140 per 30–40 kg bag). Phase-1 success unlocked bank funding for phase-2. Fits Solapur's base (indigenous poultry ~21.2 lakh; improved ~9.8 lakh).
Enablers that worked	Off-take assurance via integrator; insurance for shocks; bank readiness once cashflows were proven.
Replicable levers	Template contracts (mortality, weight gain, payment windows); WC lines linked to cycle calendars; small shed-retrofit grants (ventilation/water); tie-ups for manure offtake.

4.6 Fishery Sector

4.6.1 Fisheries, Marine and Inland

Fisheries complement farming and livestock, fostering diversified rural economies. Maharashtra boasts a 720-km coastline and 1.12 lakh square km of marine fishing grounds, with 173 fish landing centres and 15,323 operational marine fishing boats (13,700 mechanised). Inland and brackish water resources encompass 3.90 lakh hectares and 0.17 lakh hectares, respectively; total production rose from 5.90 lakh metric tonnes in 2022–2023 to 7.00 lakh metric tonnes in 2023–2024, with gross value advancing from ₹9,758 crore to ₹10,347 crore. Exports saw marginal volume growth but value increased from ₹6,212 crore to ₹6,582 crore; 2024–2025 data up to November remain preliminary.

The Pradhan Mantri Matsya Sampada Yojana drives investment and modernisation, approving ₹1,447.67 crore from 2021–2022 to 2024–2025 for 4,174 beneficiaries via cost-sharing among Union government, state, and participants. Interventions include reservoir cages, recirculating aquaculture systems, cold storage, ice plants, fish feed mills, biofloc ponds, grow-out ponds, and composite freshwater aquaculture inputs; state support extends to open-sea cage culture and fisher family livelihoods/nutrition. Reservoir cage culture accelerated: up to November 2024, 17,463 cages were sanctioned across 105 water bodies, with 4,465 erected, projecting 8,930 metric tonnes. Fishing jetties under Rashtriya Krishi Vikas Yojana and Rural Infrastructure Development Fund enhance landing and first-sale infrastructure; a conservation-linked compensation scheme reimburses fishers for damaged nets from releasing protected species like whales, sharks, dolphins, and sea turtles. Fisher-specific Kisan Credit Cards numbered 16,008 by January 2025.

4.6.2 Production & Contribution

Marine & Inland Fisheries: Maharashtra has a long coastline of 877 km with active marine fishing across 7 coastal districts and around 173 landing centres, contributing to India's seafood economy. The state's marine fish production saw significant growth in 2024, with reports noting around a 47% surge in catches (e.g., sardines, mackerel, shrimp) compared to the previous year. Despite recent gains, Maharashtra's overall fish production ranks 6th nationally for marine fishing and 17th for inland fisheries. A decade of data showed a decline in total fish output from 6.6 lakh MT to about 5.9 lakh MT between 2016–17 and 2022–23 before recent upticks. Maharashtra has a large area of ponds, tanks, and reservoirs (over 400,000+hectares) supporting freshwater fish farming. However, inland production has lagged behind other states due to underdeveloped infrastructure and limited commercial farming.

4.6.3 Livelihood, Employment & Economy

The fishery sector supports hundreds of thousands of people, particularly coastal fishermen and allied workers (boat crews, processors, transport). Maharashtra's contribution to Gross State Domestic Product (GSDP) from fisheries is small (approx 0.5–1%), but locally vital in coastal districts. Fishing provides an affordable source of protein and supports allied industries like boat building, gear, ice plants, and processing

4.6.4 Government Policy & Recent Initiatives

In 2025, the Maharashtra government granted “agriculture status” to the fisheries sector, a major policy shift. This allows fishermen and fish farmers to access Kisan Credit Cards and agricultural loans, Subsidies on electricity, inputs (seed, feed), Insurance and finance, Support for cold storage and ice factories This benefits nearly 4.8 lakh fishermen across the state. Education Infrastructure include a new Fisheries College in Vidarbha (Morshi) to improve training and technical capabilities in aquaculture & fisheries management.

4.6.5 Regulation & Sustainability

Measures such as minimum fish size limits, surveillance for illegal fishing, and ecosystem protection are being deployed to promote sustainable fishing.

4.6.6 Challenges Facing the Sector

- Structural & Productivity Issues: Lack of cold chain infrastructure, electrification, transport networks, and modern processing facilities constrains growth.
- Inadequate training and awareness of modern aquaculture practices limit productivity. Competition & Production Variability
- States like Andhra Pradesh and Karnataka have expanded fisheries faster due to stronger supportive policies, leaving Maharashtra lagging in production share.
- Research shows long-term instability in production and the need for improved coastal resource management (e.g., deep-sea fishing capacity). Environmental & Climate Pressures
- Climate events (extreme weather, changing monsoon patterns) and overfishing pose risks to stable catches and species composition.

5 Status of the Natural Environment and Emerging Challenges

Natural resources—water, forests, and land—form the foundation on which rural livelihoods in Maharashtra are built, adapted, and often strained. These are more than assets; they are dynamic forces shaping cropping patterns, migration flows, and the evolution of rural economies. However, access to these resources remains deeply unequal and increasingly volatile across Maharashtra's diverse landscapes — from the drought-prone basaltic plateaus of Marathwada to the forested Sahyadris, the irrigated river valleys of western Maharashtra, the coastal plains of Konkan, and the tribal belts of Vidarbha. Among the many factors influencing rural livelihoods, the irrigation divide is perhaps the most decisive. Farmers with access to borewells, canals, or tank systems can typically manage at least one reliable cropping cycle. Those without such access remain dependent on erratic rainfall, trapped in cycles of low returns and seasonal distress migration. In many regions, particularly where soils are shallow or degraded, overall productivity remains low.

These vulnerabilities are now worsening with climate change. Rising temperatures, erratic rainfall, wild boar incursions on hilly farms, and landslides in the Western Ghats are converting environmental risks into daily challenges. Forest-dependent communities face additional, often invisible, constraints: crop losses from wild animals frequently go uncompensated due to restrictive forest regulations. Despite these adversities, many rural actors are experimenting with dryland horticulture, lift irrigation, and collective land and water management, offering tangible glimpses of resilience. The following sections examine how the condition of water, forests, and land not only determines rural incomes but also shapes the rhythm, security, and dignity of life in rural Maharashtra

5.1 Jameen: Land and Agriculture

Land remains the most fundamental resource shaping rural livelihoods in Maharashtra. It is both a productive asset and a marker of social identity, security and belonging. In a state where more than half the workforce is still tied to agriculture and allied activities, the distribution, quality, and tenure of land determine the possibilities of livelihood diversification, credit access, and inter-generational mobility. Yet land in Maharashtra is increasingly under pressure from competing uses such as urban expansion, infrastructure, mining, and industrial corridors. For many households, especially smallholders and landless labourers, the challenge is not only access to cultivable plots but also the sustainability of land under conditions of soil degradation, declining water tables, and climate variability. Land use lies at the intersection of ecology, economy, and society: it is the stage on which rural transformation and climate resilient livelihoods play out. Understanding the status of land in Maharashtra including landholding patterns, shifts in land use, and the health of soils is essential to grasping both the larger story of rural livelihoods and the specific opportunities and vulnerabilities that shape them.

5.1.1 Landholding Patterns and Ownership

Maharashtra's agrarian structure is marked by fragmented holdings and unequal land distribution, a reality that directly shapes rural livelihoods, agricultural productivity, and economic resilience. According to the NABARD State Focus Paper 2024-25[37], the state has 1.53 crore operational holdings

spread across 205 lakh hectares, with an average holding size of just 1.34 ha. This is significantly smaller than the all-India average (about 1.08 ha as per the Agriculture Census 2015-16), highlighting the acute fragmentation of land in Maharashtra. A striking feature is that nearly four-fifths of all holdings (79.52%) are small and marginal (≤2 ha). These holdings account for the majority of farm families in the state, but due to their limited size, they face challenges in achieving economies of scale, adopting modern mechanisation, and investing in irrigation and soil improvement. Fragmentation also leads to higher transaction costs, greater dependence on rainfed agriculture, and heightened vulnerability to climatic and market shocks.

Table 68 Distribution of Landholdings in Maharashtra (2015-16) Source: Agriculture Census 2015-16; NABARD State Focus Paper 2024-25.

Classification of Holding	Number of Holdings (lakh)	% of Total Holdings	Area Operated (lakh ha)	% of Total Area
≤ 1 ha	78.16	51%	34.49	17%
>1 to ≤2 ha	43.39	28%	57.71	28%
>2 ha	31.30	21%	112.86	55%
Total	152.85	100%	205.06	100%

By contrast, medium and large farmers (>2 ha), though they represent a smaller proportion of cultivators, control a disproportionately large share of land resources. This concentration of land enables them to secure better access to institutional credit, irrigation, and government subsidies, further widening the rural inequality gap.

5.1.2 Changes in Land Use

Table 69 Land Use Distribution in Maharashtra (2022-23) Category (Nine-Fold Classification)

Category (Nine-Fold Classification)	% of Total Area
Forests	16.90
Non-agricultural uses	5.75
Barren & unculturable land	6.46
Permanent pastures & grazing lands	4.59
Misc. tree crops & groves	0.87
Culturable wasteland	3.13
Fallow lands (other than current fallows)	3.88
Current fallows	4.80
Net sown area	53.62
Total	100% (30.76 Mha)

Source: LAND USE STATISTICS AT A GLANCE: 2022-23[38]

According to the land use statistics at a glance: 2022-23 Report[39] by Government of India the Nine-Fold Classification of Land, Maharashtra reported a total geographical area of 30.76 million hectares in

[37] *https://www.nabard.org/info-centre-state-focus-papers.aspx?cid=512&id=698*

[38] *https://desagri.gov.in/wp-content/uploads/2024/09/Final-file-of-LUS-2022-23-for-uploading.pdf*

[39] *Ibid*

2022-23. Forests account for 16.9% of this area, while non-agricultural uses take up 5.75%. Barren and unculturable land represent 6.46%, and permanent pastures and grazing lands about 4.59%, indicating the shrinking share of commons that traditionally supported livestock-dependent households. Miscellaneous tree crops and groves account for just 0.87%, while culturable wasteland makes up 3.13%.

A significant proportion of land falls under fallow categories with 3.88% under other fallows and 4.80% under current fallows reflecting both seasonal dynamics of cultivation and structural constraints such as irrigation access. The net sown area is 53.62%, which means just over half of Maharashtra's land is actively under cultivation. Livelihoods activities are also vulnerable fluctuations in rainfall, soil degradation, and land fragmentation.

Over the past decade, Maharashtra's land use profile has shown both continuity and shifts with implications for rural livelihoods. The state's total reported geographical area remained stable at around 30.77 million hectares, with forests consistently occupying about 5.2 million hectares (≈17% of the reporting area). There has been a steady increase in land classified as “not available for cultivation” from 6.67 lakh hectares in 2013-14 to 7.54 lakh hectares in 2022-23. Both non-agricultural uses (from 5.2 to 5.19 million ha) and barren/unculturable land (from 1.46 to 1.77 million ha) expanded, pointing to growing pressures from infrastructure, urban expansion, and land degradation. Permanent pastures and grazing commons are critical for rural households, especially in drought-prone districts. They have remained stagnant at around 1.2 to 1.4 million hectares, while culturable wasteland has slowly expanded from 0.92 to 0.96 million hectares, and “other uncultivated land excluding fallows” from 2.41 to 2.64 million hectares over the decade.

These changes amount to over 2 lakh hectares of land shifting away from direct agricultural use. For rural livelihoods, the Cultivable land is increasingly constrained by urbanisation, infrastructure, and ecological degradation, while the commons that buffer rural households grazing lands, fallows, wastelands show either stagnation or decline. Over the past decade (2013-14 to 2022-23), the net sown area has declined slightly (from 17.36 mha to 16.49 mha), while the gross cropped area has increased (from 23.3 mha to 25.3 mha). This shift is driven by rising cropping intensity, which climbed from 134% to nearly 154%.

Irrigation remains another key determinant of rural livelihoods in Maharashtra. Despite major irrigation projects, only about 2024% of cropped area is irrigated, far below the national average. Net irrigated area declined from 3.25 mha (2013-14) to 3.09 mha (2022-23), even as gross irrigated area rose to 5.9 mha, highlighting multiple cropping on irrigated plots. Land irrigated by canals have also stagnated (1.03 mha in 2022-23), while wells continue to dominate irrigation, reflecting both farmer investment and groundwater pressure.

5.1.3 Crop Composition

Maharashtra's land use is marked by diverse cropping systems, reflecting its agro-climatic diversity.

The cultivation of Cereals & Millets declined from 7.5 mha (2013-14) to 6.3 mha (2022-23), with sharp drops in jowar and bajra. Rice cultivation remained stable (~1.7 mha). Cultivation of pulses expanded significantly from 3.95 mha to nearly 5.0 mha, led by gram and tur. This shift reflects resilience strategies in semi-arid zones. Sugarcane cultivation increased from 0.94 mha to 1.36 mha, despite high water demands, underlining irrigation-policy distortions and the influence of cooperatives.

Oilseed cultivation grew steadily, reaching 5.27 mha in 2022-23, dominated by soybean. Maharashtra is now India's leading soybean state. However, cotton fluctuated, with ~4.2 mha under cultivation in 2022-23, continuing to anchor Vidarbha and Marathwada.

Cash crops - Fruits and vegetables together now cover >2.5 mha, led by mango, citrus, banana, grapes, onions, and potato. Among other things, they help farmers with income diversification.

Figure 4 Major Crops & Key Non-Food Crops in Maharashtra

Table 70 Crops in Different Districts of Maharashtra

Crops	Districts
Cotton	Jalgaon, Yavatmal, Aurangabad, Beed, Jalna, Amravati, Wardha, Dhule, Nanded, Parbhani, Buldhana, Nagpur, Akola, Chandrapur, Ahmednagar & Nandurbar
Tur	Yavatmal, Latur, Amravati, Buldhana, Nanded, Wardha, Beed, Osmanabad, Nagpur, Hingoli, Washim, Akola, Jalna, Parbhani, Aurangabad & Chandrapur.
Soybean	Latur, Buldhana, Nanded, Washim, Amravati, Yavatmal, Parbhani, Beed, Akola, Hingoli, Osmanabad, Nagpur, Jalna & Wardha
Groundnut	Kolhapur, Satara, Sangli, Nasik, Pune, Dhule, Beed, Ahmednagar & Aurangabad
Sorghum	Solapur, Ahmednagar, Sangli, Pune, Satara, Osmanabad, Nanded, Latur, Jalgaon
Rice	Gondia, Bhandara, Gadchiroli, Chandrapur, Raigad, Kolhapur, Nagpur, Nashik, Palghar
Gram	Latur, Osmanabad, Buldhana, Nanded, Ahmednagar, Yavatmal, Hingoli, Amravati, Akola, Jalgaon
Bajra	Ahmednagar, Nasik, Beed, Dhule, Satara, Aurangabad, Sangli, Solapur, Pune, Jalgaon
Sugarcane	Solapur, Kolhapur, Ahmednagar, Pune, Satara, Sangli, Osmanabad, Beed & Latur
Maize	Jalgaon, Nashik, Solapur, Aurangabad, Ahmednagar, Dhule, Sangli, Jalna, Buldhana, Nandurbar, Pune, Satara
Moong	Ahmednagar, Hingoli, Nanded, Dhule, Jalgaon, Jalna, Akola, Parbhani, Beed, Amravati, Buldhana, Osmanabad
Sesame	Dhule, Jalgaon, Osmanabad, Nanded, Beed, Yavatmal, Latur, Buldhana, Akola, Gondia, Amravati, Pune
Black Gram	Nanded, Osmanbabad, Beed, Solapur, Jalgaon, Akola, Ahmednagar, Hingoli, Buldhana, Sangli, Dhule, Jalna

Non-Food Crops & Fodder: Fodder cultivation has been stable at ~0.97 mha, supporting livestock-based livelihoods. Cotton, soybean, and sugarcane dominate non-food cash crops. Minor crops like tobacco, spices, and medicinal plants occupy small areas (<0.1 mha) but remain important for niche economies. Rising cropping intensity from 134% to 154% in a decade indicates pressure on limited land resources. Farmers increasingly pursue double cropping or integrate horticulture with field cropsthat can boost output and incomes in the short term, but brings the risk of soil nutrient depletion, salinity build-up, and groundwater stress, especially in Marathwada and Vidarbha.

Deep Dive - From Single-Season Fields to Horticulture Slivers (Telhara & Akot)

Section	Explanation
Setting	Small/marginal holders; 2 major, 3 medium, 37 minor irrigation projects exist, but tail-end reliability stays low.
Challenge	Hybrid-seed soybean/cotton dominate—raising cash outlays, tiring soils, narrowing crop basket. Un-bunded slopes + wet bursts shear topsoil; farm ponds breach.
What was observed	Where micro-irrigation / on-plot storage exists, farmers shift a slice to citrus/key lime or short-cycle spices—bringing more frequent cash than a single kharif harvest.
Enablers that worked	Micro-irrigation lines; fruit insurance payouts; FPO aggregation; SHG seasonal credit timed to input windows.
Replicable levers	Quick land & water works (contour bunds, pond protection), micro-irrigation first for horticulture rows, seasonal credit synced to sowing/top-dressing.

5.2 Jal: Status of Water Resources in Maharashtra

Maharashtra, the third-largest state in India with a geographical area of about 3.08 lakh km², lies in the west-central part of the country and is home to over 11.24 crore people. Administratively divided into 36 districts across six divisions, and further into five broad regions Konkan, Western Maharashtra, Khandesh, Marathwada and Vidarbha the state represents a mosaic of contrasting geographies and climates. Rainfall varies dramatically, from 500 mm in the semi-arid interiors of Ahmednagar to nearly 5000 mm along the Konkan coast, making water availability one of the most decisive factors shaping livelihoods. Water is central to Maharashtra's rural economy, yet its availability and access remain deeply unequal. Rainfall variability, over-dependence on groundwater, and growing urban demand are straining both human and ecological systems. This section explores the shifting patterns of rainfall, the state of surface and groundwater resources, and the emerging challenges of water stress across rural and urban landscapes.

5.2.1 Rainfall patterns: regional and seasonal differences, recent changes

According to the Statement on Climate for the State of Maharashtra: 2023 published by the India Meteorological Department (IMD)[40], the state recorded an annual mean land surface air temperature of 25.8°C in 2023, which was 0.16°C above the long-period average (LPA) for 1981-2010. This makes 2023 the 29th warmest year for Maharashtra since 1901. The annual maximum and minimum temperatures were also slightly elevated, at +0.18°C and +0.14°C above their respective LPAs. In terms of rainfall, only 3 out of 36 districts experienced excess rainfall (20% to 59% above LPA), 25 districts received normal rainfall (within ±19% of LPA), while the remaining 8 districts registered deficient rainfall (20% to 59% below LPA), highlighting spatial variability in precipitation across the state. This recent temperature and rainfall data underscores the broader patterns of climatic variability in Maharashtra, setting the context for a closer look at the state's spatial and seasonal rainfall distribution.

Takle and Pai (2020) of the India Meteorological Department highlight that Maharashtra's monsoon is highly uneven both spatially and temporally, shaped by the state's topography, seasonal weather systems, and large-scale ocean–atmosphere interactions. The Konkan and Goa region, located on the windward side of the Western Ghats, receives the highest rainfall, averaging over 2200 mm during the southwest monsoon (June–September, JJAS). Moisture carried from the Arabian Sea rises along the Ghats, triggering rainfall as the moist boundary layer breaks and condenses into deep stratiform [41] clouds. During July and August, peak monsoon months, much of Konkan receives over 600 mm rainfall, driven by strong off-shore troughs that induce large, long-lasting precipitating systems.

In contrast, Madhya Maharashtra receives less than 150 mm, while Marathwada and Vidarbha record 150–500 mm of rainfall. Most monsoon depressions originate in the north Bay of Bengal and move northwestward, influencing rainfall in central India, including parts of Vidarbha and Marathwada. These local patterns also interact with large-scale climate systems such as the El Niño–Southern Oscillation (ENSO)[42] . By September, as monsoon activity weakens, rainfall declines to around 400 mm in Konkan and below 200 mm in the interior basins.

Monthly variations are also marked: July and August account for 60–70% of seasonal rainfall across all sub-regions, while June marks the onset with lighter precipitation, and September contributes least, though it remains crucial for crop maturity in parts of south Madhya Maharashtra and west

[41] Stratiform clouds are layered, sheet-like clouds that cover large areas of the sky.

[42] ENSO (El Niño–Southern Oscillation) is a climate phenomenon in the Pacific Ocean that affects global weather patterns. In Maharashtra, ENSO influences monsoon rainfall, with El Niño often linked to droughts and La Niña to excess rainfall.

Note: Reference Map in Annexure

Marathwada. The number of rainy days follows a similar pattern — Konkan and Goa record rainfall on over 65% of days in the peak months, whereas southern Madhya Maharashtra sees rain on fewer than 25% of days.

The coefficient of variation (CV) — a measure of rainfall consistency — reveals stark regional contrasts.

- In June, CV is low (30–35%) in Konkan and Goa but very high (>80%) in central Madhya Maharashtra.
- Marathwada and Vidarbha show moderate variability (50–55%).
- During July and August, rainfall is more stable in Konkan and Vidarbha (CV < 35%) but remains highly variable (>80%) in north Madhya Maharashtra and moderate to high (55–60%) in Marathwada.
- By September, variability again increases in the interior zones.
- Over the full JJAS season, rainfall variability exceeds 60% in central Madhya Maharashtra but remains relatively lower in Konkan, Goa, and Vidarbha.

These patterns underscore the vulnerability of Maharashtra's inland regions to erratic monsoon behavior — a critical factor for agricultural productivity and water security. While Konkan and parts of Vidarbha consistently receive high and stable rainfall, the semi-arid belts of Marathwada and Madhya Maharashtra remain chronically exposed to drought risk and rainfall uncertainty.

Recent analyses point to an alarming trend: rainfall within the monsoon season is now increasingly concentrated into shorter, intense spells, replacing the traditional, evenly distributed pattern[43]. This shift heightens flood risks in high-rainfall zones and deepens drought stress in arid regions, intensifying livelihood insecurity. These diverging vulnerabilities call for region-specific, climate-adaptive approaches in water resource management, agricultural planning, and rural livelihood strategies — not as optional measures, but as essential steps toward building a resilient rural Maharashtra.

5.2.2 River Basins, Dams and Surface Water Structures

Maharashtra spans 30.8 million hectares, of which 22.5 million hectares is cultivable. Around 40 percent of the state is drought prone and about 7 percent is flood prone. Rainfall in Maharashtra is highly variable, ranging from 400 to 6000 millimetres, and occurs mostly between June and September with 40 to 100 rainy days annually[44]. The Maharashtra State has 17 main Rivers, out of which 11 are western flowing Rivers.

[43] https://mausamjournal.imd.gov.in/index.php/MAUSAM/article/view/1364/1190

[44] https://mwrra.maharashtra.gov.in/en/overview-of-the-state/

Note: Reference Map in Annexure

Table 71 Major Rivers of Maharashtra: Origin, Confluence, Catchment Area and Water Capacity

S. No.	River	Origin	Confluence / Merge	Catchment Area (km^2)	Water Carrying Capacity (km^3)
1	Godavari River	Trimbakeshwar, Nashik	Bay of Bengal	312,812	110.54
2	Krishna River	Mahabaleshwar, Maharashtra	Bay of Bengal	258,948	781.2
3	Tapi River	Multai Forest, Madhya Pradesh	Arabian Sea	64,145	148.8
4	Bhima River	Bhimashankar, Pune District	Krishna River at Karnataka	70,614	1.57
5	Darna River	Kalsubai Hill Range	Godavari River	14,789	0.64
6	Dudganga River	Sindhudurg District	Krishna River	7,618	0.32
7	Indrayani River	Kurvande Village, near Lonavala	Bhima River	4,219	0.41
8	Koyana River	Mahabaleshwar, Sangli	Krishna River	7,123	0.74
9	Kukadi River	Naneghat, Pune District	Ghod River	3,679	0.14
10	Mithi River	Vihar Lake, Mumbai	Arabian Sea	4,519	0.31
11	Mula-Mutha River	Pune	Bhima River	3,010	0.37
12	Nag River	Ambazari Lake, Nagpur City	Kanhan River	4,136	0.58
13	Nira River	Near Bhor, Pune District	Bhima River	6,581	0.69
14	Panchaganga River	Chikhli Village, Kolhapur District	Krishna River	5,418	0.55
15	Pravara River	Bhandardara Village, Ahmednagar	Godavari River	6,537	0.86
16	Sina River	Torna, Ahmednagar District	Bhima River	6,784	0.72
17	Tanasa River	Shahapur, Thane District	Vaitarna River	4,578	0.58

Source: WRIS 2020

Maharashtra's rivers form the backbone of its rural water resources and agriculture. The Godavari River, the second largest in India, originates at Trimbakeshwar in Nashik and flows eastward covering a vast catchment of 3.12 lakh square kilometres. It supports extensive irrigation networks and is often called the Southern Ganga due to its cultural and economic importance. The Krishna River, Maharashtra's second largest, rises from Mahabaleshwar in Satara district and sustains southern parts of the state before reaching the Bay of Bengal. The Tapi River flows westward into the Arabian Sea, traversing hilly regions like the Satpura and Ajanta ranges and providing water to drought-prone areas in northern Maharashtra. Tributary networks such as the Bhima with its 861-kilometre length and Pravara with 208-kilometre length are vital for agricultural livelihoods in semi-arid zones. Large dams including Koyna on the Krishna and Bhandardara on the Pravara have created significant irrigation potential but water availability remains uneven.

Nearly 40 percent of the state's area is drought prone, and east-flowing rivers carry 55 percent of Maharashtr a's dependable yield yet face increasing pressure from population growth and agriculture. Smaller rivers like Kukadi, Nira, and Panchganga play a crucial role in meeting rural irrigation needs and linking village economies to seasonal water cycles. (Pondhe & Dhere, 2024). The estimated average annual water resources consist of 164 cubic kilometres of surface water and 20.5 cubic kilometres of subsurface water. The state has five major river basins: Godavari, Krishna, Tapi, Narmada and west

flowing rivers draining into the Arabian Sea. Of the dependable yield, 55 percent is available in the four river basins east of the Western Ghats, which support 92 percent of the cultivable land and more than 60 percent of the rural population. Nearly 49 percent of the area in these four basins, home to 43 percent of the population, is already water deficit or highly deficit. This situation is expected to worsen with growing population and economic activities [45].

Table 72 Status of the River Basins in Maharashtra Source: MWRRA

Basin	Geographical area (Mha) / Percent of Area w.r. to Maharashtra	Cultivable Area (Mha)	Annual Average Availability (Mm3)	Dependable Yield (Mm^3)	Tribunal Allocation (Mm^3)
Godavari	15.43 / 49.5%	11.25	50880	37,300	34,185
Tapi	5.12 / 16.7%	3.73	9118	6,977	5,415
Narmada	0.16 / 0.5 %	0.06	580	315	308
Krishna	7.01 / 22.6%	5.63	34032	28,371	16,818
West Flowing	3.16 / 10.7%	1.86	69210	58,599	69,210
State Total	30.80 / 100.0%	22.53	163820	131,562	125,936

45% of Maharashtra's water resources lie in the west-flowing rivers, which are largely monsoon-fed streams originating in the Western Ghats and draining rapidly into the Arabian Sea. However, this water is difficult to harness for the state's drier regions, since the Konkan lies at an average altitude of just 60 metres above sea level, while the Ghats rise over 600 metres. Transferring water across this steep gradient would require massive pumping infrastructure, and affordable engineering solutions for lifting and transporting such volumes eastward are still lacking.

Water Storage has long been central to sustaining rural livelihoods in Maharashtra given uneven rainfall patterns and recurring droughts. Dams and reservoirs have therefore emerged as critical infrastructure, enabling irrigation, stabilizing crop production, and supporting rural livelihoods in drought-prone areas. In the face of growing climatic variability and increasingly erratic monsoons, the role of these water storage systems is becoming ever more vital. Beyond the sheer volume of water impounded, their true value lies in delivering reliable services ensuring water security and resilience for rural communities at the right time and place.

Maharashtra's extensive network of dams and surface water structures illustrates both the transformative potential of well-managed water storage and the persistent challenge of ensuring equitable access across regions. The Ministry of Jal Shakti's release of India's first-ever Census of Water Bodies in 2018-19[46] noted that in Maharashtra, there are 97,062 water bodies of which an overwhelming 99.3% are located in rural areas. The state's water bodies are predominantly man-made

[45] *Ibid*

[46] *The report marks a critical milestone in mapping and managing the country's surface water resources. This census, covering 33 States and Union Territories (excluding Daman & Diu, Dadra & Nagar Haveli, and Lakshadweep), created a comprehensive database of 2.42 million water bodies. These include natural and man-made structures such as ponds, tanks, lakes, reservoirs, and water conservation schemes. Water bodies were defined as natural or constructed units, bounded on all sides, used for storing water from rainfall, ice-melt, streams, or diverted flows for purposes such as irrigation, drinking water, groundwater recharge, pisciculture, recreation, and religious activities. At the national level, 97.1% of water bodies are in rural areas, underscoring their importance for rural water management. Ponds account for the largest share (59.5%), followed by tanks (15.7%), reservoirs (12.1%), and water conservation structures such as percolation tanks and check dams (9.3%). Maharashtra stands out in this census as the leading state for water conservation schemes, highlighting its sustained efforts towards groundwater recharge and drought mitigation.*

(99.4%) and publicly owned (99.7%), reflecting significant investments in water conservation infrastructure. Of these, 98.9% are currently in use, serving functions such as groundwater recharge, domestic and drinking water supply, and irrigation. Notably, Aurangabad, Jalna, and Nashik districts rank among the top five nationally in terms of water body utilization across multiple purposes. Additionally,

- 77% of water bodies are used for groundwater recharge, while only 8.3% support irrigation and 13% serve domestic/drinking needs, underlining their critical role in replenishing aquifers and sustaining rural water security.
- Condition and Usage: Of the 5,403 water bodies assessed for storage trends, 63.2% fill completely every year, while 35.8% usually fill up, reflecting variability in water availability.
- Natural vs. Man-Made: Only 0.6% are natural water bodies, highlighting the state's reliance on constructed water storage solutions.
- Water Spread Area and Storage: Nearly 95% of water bodies have a storage capacity below 100 cubic meters, and over 87% are less than 5 hectares in spread area, emphasizing their importance for micro-level water management.
- Integration with Planning: 60.7% of water bodies are integrated into District and State Irrigation Plans, with 90.8% being water conservation structures like percolation tanks and check dams.
- Encroachment Issues: Encroachments have been reported in 251 water bodies, primarily affecting percolation tanks and check dams, posing challenges to effective water management.

Table 73 Water bodies In Maharashtra

Section	S.No.	Parameter	Unit	Value	Percentage
Count & Location	1	Total Number of Water Bodies	No.	97,062	100.00%
	1	Total in Rural Areas	No.	96,343	99.26%
	1	Total in Urban Areas	No.	719	0.74%
Type	1.a	Ponds	No.	898	0.93%
	1.a	Tanks	No.	3,797	3.91%
	1.a	Lakes	No.	350	0.36%
	1.a	Reservoirs	No.	358	0.37%
	1.a	Water Conservation/Percolation Tanks/Check Dams	No.	90,023	92.75%
	1.a	Others (Type)	No.	1,636	1.69%
Area/Ownership Tags	1.b	Water Bodies with Private Ownership	No.	295	0.30%
	1.b	DPAP Area	No.	4,728	4.87%
	1.b	Tribal Area	No.	7,110	7.33%
	1.b	DDP Area	No.	7	0.01%
	1.b	Flood Prone Area	No.	12	0.01%
	1.b	Naxal Affected Area	No.	285	0.29%
	1.b	Others (Area)	No.	84,920	87.49%
	1.b	Total Area-Based	No.	97,062	100.00%
Primary Use	2	Irrigation Use	No.	7,976	8.31%
	2	Industrial Use	No.	37	0.04%
	2	Pisciculture	No.	29	0.03%

Section	S.No.	Parameter	Unit	Value	Percentage
	2	Domestic/Drinking	No.	12,473	12.99%
	2	Recreation	No.	78	0.08%
	2	Religious	No.	59	0.06%
	2	Ground Water Recharge	No.	74,097	77.16%
	2	Others (Use)	No.	1,284	1.34%
Origin	3	Natural Water Bodies	No.	574	0.59%
	3	Man-Made Water Bodies	No.	96,488	99.41%
Not-in-Use Reasons	4	Dried Up	No.	194	18.82%
	4	Under Construction	No.	70	6.79%
	4	Siltation	No.	157	15.23%
	4	Destroyed Beyond Repair	No.	149	14.45%
	4	Salinity	No.	2	0.19%
	4	Industrial Effluents	No.	26	2.52%
	4	Others (Not in Use)	No.	433	42.00%
Filling Frequency	5	Filled Every Year	No.	3,414	63.19%
	5	Usually Filled	No.	1,935	35.81%
	5	Rarely Filled	No.	38	0.70%
	5	Never Filled	No.	16	0.30%
Water Spread Area	7	< 0.5 ha	Ha.	16,396	16.91%
	7	0.5 to 1 ha	Ha.	34,226	35.30%
	7	1 to 5 ha	Ha.	34,134	35.21%
	7	5 to 10 ha	Ha.	10,329	10.65%
	7	10 to 50 ha	Ha.	1,455	1.50%
	7	> 50 ha	Ha.	407	0.42%
Storage Capacity	8	0 to 100 Cu.Mtrs	Cu.Mtrs	92,026	94.82%
	8	100 to 1000 Cu.Mtrs	Cu.Mtrs	3,885	4.00%
	8	1000 to 10000 Cu.Mtrs	Cu.Mtrs	281	0.29%
	8	> 10000 Cu.Mtrs	Cu.Mtrs	870	0.90%

The census provides a strong foundation for further research into the efficiency, equity, and sustainability of water management interventions across the state's diverse agro-climatic zones.

5.2.3 Groundwater Status: Depletion and Recharge Challenges

The Koyna Dam, located near Deshmukhwadi in Patan tehsil of Satara district, is one of the largest multipurpose water resource and hydroelectric projects in India. Built across the Koyna River, a major tributary of the Krishna, the dam stretches 807.22 metres in length and rises 85.35 metres above the river bed, with a storage capacity of 2,980 million cubic metres. Its catchment area covers 891.78 square kilometres, and the reservoir submerged 115.35 square kilometres of land. This led to the displacement of 9,069 families from 98 villages, who were resettled across six districts of Maharashtra including Satara, Sangli, Solapur, Kolhapur, Raigad and Ratnagiri. (https://www.erpublication.org/published_paper/IJETR032126.pdf) The dam was designed not only for power generation but also to support irrigation in semi-arid regions of the state. Initially, water for

irrigation was released eastwards through a sluice in the main dam, enabling cultivation in large tracts of farmland downstream.

Later, a dam-foot power house was constructed on the right flank, with two generators of 20 MW each, producing 40 MW during irrigation rotation periods and ensuring efficient use of stored water. Koyna's strategic location, with a sheer vertical drop of 487.68 metres on the western side and proximity of just 56 kilometres to the Arabian Sea, made it possible to develop a high-head hydroelectric scheme at a relatively low cost. The project has expanded over time through four stages, reaching a total installed capacity of 1,960 MW. Stages I and II, built underground, operate as base stations with a 60 percent load factor, while Stages III and IV function as peaking stations, meeting the state's fluctuating power demand during morning and evening hours. Beyond power generation, the Koyna project has significantly enhanced agricultural productivity in downstream regions by ensuring reliable water supply for irrigation, particularly in drought-prone areas of western and southern Maharashtra.

While rivers like the Godavari, Krishna and Tapi dominate the surface hydrology, the deeper story of Maharashtra's water lies beneath the ground. The Central Ground Water Board (CGWB) maintains a network of around 2,090 monitoring wells across the state, comprising 1,776 dug wells and 314 piezometers. These wells track the pulse of aquifers four times a year before the monsoon, during the rains, after the kharif harvest, and after the rabi season. This system reveals the seasonal ebb and flow of groundwater: a rise in levels during the monsoon months - August 2023 saw 90% of wells with water levels within 10 meters below ground level), and a gradual decline by January 2024 as water is withdrawn for irrigation and household needs. The patterns also highlight regional contrasts shallow groundwater in the rainfall-rich Konkan versus deeper water tables in the hard rock terrains of Jalgaon, Buldhana, Akola, Dhule, and Amravati, where extraction often exceeds natural recharge.

Geologically, Maharashtra is dominated by the Deccan basalts (about 82% of the state's area), a hard rock formation with limited and localized storage. The rest of the area is covered by Quaternary alluvium (4.7%), Gondwanas (1.6%), Precambrian formations (10.5%), and smaller sedimentary outcrops. These formations create three major aquifer systems unconsolidated alluvium, semi-consolidated, and consolidated hard rock aquifers. The alluvial aquifers, though covering only about 14,500 km², are the most productive, while basaltic aquifers, despite their dominance, are fragmented and recharge slowly. This explains why Maharashtra, despite receiving substantial rainfall in parts, often struggles with recurring droughts and groundwater stress.

Table 74 Groundwater Details

Parameter	Value
Total Annual Groundwater Recharge	33.03 BCM
Annual Extractable Groundwater Resources	31.15 BCM
Annual Groundwater Extraction	16.5 BCM
Stage of Extraction	52.99 %
Safe Blocks	302 (84.1%)
Semi-Critical Blocks	41 (11.4%)
Critical Blocks	7 (1.95%)
Over-Exploited Blocks	8 (2.2%)
Total Blocks Assessed	359

Note: Reference Map in Annexure

The latest assessment (2023-24[47]) places Maharashtra's total annual groundwater recharge at 33.03 BCM, of which 31.15 BCM is considered extractable. Actual annual extraction is around 16.5 BCM, giving a stage of extraction of 52.99% a figure that at first glance suggests sustainability. Indeed, 302 out of 359 blocks (84%) are categorized as "Safe", with only 8 blocks (2.2%) marked "Over-Exploited" and small fractions under "Critical" (1.95%) or "Semi-Critical" (11.4%) categories. However, these aggregate numbers mask sharp local contrasts. For example, while large parts of Vidarbha and Konkan remain relatively secure, pockets of Marathwada and western Maharashtra continue to face persistent stress, saline ingress, and declining pre-monsoon levels.

The socio-economic implications are profound. In rural Maharashtra, groundwater is not just a hydrological reserve but the primary buffer against erratic rainfall, failed canals, or delayed monsoons, given over 53% of the population depends on agriculture, and agriculture alone contributes nearly 18% to the state's GDP (2021- 22). Borewells and dug wells underpin the state's shift toward cash crops like sugarcane, cotton and horticulture, but in doing so, they also expose households to the risks of aquifer depletion. Migration pressures, debt cycles, and crop choices are all tightly interlinked with groundwater availability.

In recent years, the state has responded with a mix of conservation and policy measures from Jalyukt Shivar Abhiyan's focus on local recharge structures, to stricter monitoring by the Maharashtra Water Resources Regulatory Authority (MWRRA), and integration with national missions like Atal Bhujal Yojana. These interventions, alongside improved monitoring, explain the modest 1.87% reduction in groundwater extraction stage over the last four years. Still, the underlying challenge remains: ensuring that groundwater governance keeps pace with the demands of both livelihoods and development, in a state where aquifers are as fragile as they are indispensable.

There are 4 visible trends:

Seasonal Water Level Fluctuations (2023-24)[48]: Groundwater levels are monitored four times annually. A comparison of seasonal fluctuations with the pre-monsoon baseline (May [2023]shows a sharp rise during monsoon months, followed by declines through the agricultural cycle.

Table 75 Seasonal Water Level Fluctuations

Period (Compared with May 2023)	Rise (02 m)	Rise (24 m)	Rise (>4 m)	Fall (02 m)	Fall (24 m)	Fall (>4 m)
Aug- May	33.65%	23.3%	29.8%	7.75%	1.68%	1.26%
Nov- May	37.15%	24.64%	19.85%	1.8%	3.48%	12.07%
Jan- May	42.46%	20.0%	12.4%	17.6%	3.47%	2.99%

The rise during the month of August reflects a monsoon recharge. however, over 12% of wells already showed >4 m decline by the month of November, indicating heavy extraction for kharif harvests. By January, 17.6% of wells showed further falls even at shallow levels, directly undermining rabi cultivation. For farmers, this seasonal volatility translates into short-lived water security, forcing dependence on borewells and deep aquifers.

Decadal Comparisons (2022 vs 2023)[49]: The Yearbook compares recent water levels with the decadal average, providing insights into long-term resilience.

[47] *https://www.cgwb.gov.in/cgwbpnm/publication-detail/1687*

[48] *https://www.cgwb.gov.in/cgwbpnm/publication-detail/1687*

[49] *Ibid*

- May 2023: 74% of wells showed a rise compared to the 2013-22 mean, 26% showed decline.
- Aug 2023: 56.3% rise, 43.5% fall.
- Nov 2023: 47.1% rise, 52.8% fall.
- Jan 2024: 60.6% rise, 39.4% fall.

While the overall decade-long picture appears balanced, the November decline (over half of wells falling) reveals that post-monsoon storage is not holding up. This underlines the short recharge-retention window of basalt aquifers, leaving rural households exposed to drought-like conditions even in normal rainfall years.

Annual Fluctuations (2022-23 vs 2023-24)[50]: Year-to-year comparisons highlight how quickly groundwater reserves are depleted within a single hydrological cycle. August-November-January comparisons show far more declines than rises, despite good monsoon rainfall. This indicates extraction outpacing recharge within the same year. For rural livelihoods, the burden is clear: higher costs for pumping water, borewell deepening, and increased vulnerability to crop failure during rabi.

Table 76 Annual Fluctuations (2022-23 vs 2023-24)

Period	Rise 02m	Rise 24m	Rise >4m	Fall 02m	Fall 24m	Fall >4m
May-May	37.5%	11.0%	6.6%	30.1%	8.3%	4.8%
Aug-Aug	23.7%	3.4%	2.5%	42.2%	15.3%	11.9%
Nov-Nov	27.8%	3.5%	2.7%	39.8%	14.3%	10.6%
Jan-Jan	33.6%	6.2%	3.8%	37.6%	10.3%	6.5%

Long-Term Trends (2014-23)[51]: Longer-term analysis paints a mixed picture where during the pre-monsoon period (May), 60% of wells showed rising trends, 40% showed decline, while 70.5% showed rise and 29.4% showed decline during the po the post-monsoon period (November).

Long-term stability masks critical pre-monsoon stress. For farmers, this means entering each cropping season with a reduced groundwater buffer, particularly in semi-arid regions like Marathwada, where even a small rainfall deficit translates into water insecurity.

Participatory Groundwater Monitoring[52]

In 2023-24, 211 observers across districts monitored wells weekly, with strong presence in Amravati (38), Buldhana (10), Chandrapur (10), and fewer in Jalna, Hingoli, Latur Where communities are engaged, awareness of water budgeting improves. Scaling participatory monitoring could integrate local knowledge with policy, enabling more responsive interventions. However, drought-prone districts remain underserved.

[50] *Ibid*

[51] *https://www.cgwb.gov.in/cgwbpnm/publication-detail/1687*

[52] *Ibid*

Table 77 Groundwater at Glance

Indicator	Status
Total Annual Groundwater Recharge	33.03 BCM
Annual Extractable Groundwater Resources	31.15 BCM
Annual Groundwater Extraction	16.5 BCM
Stage of Extraction	52.99 % (Moderate)
Block Categorisation	302 Safe (84.1%), 41 Semi-Critical (11.4%), 7 Critical (1.95%), 8 Over-Exploited (2.2%)
Seasonal Fluctuation (2023-24)	Aug: ~87% wells <10 m bgl; By Nov: 53% wells showed decline
Annual Fluctuation (2022-23 2023-24)	Aug: 69% wells declined; Nov: 65% wells declined
Long-Term Trend (2014-23)	Pre-monsoon: 60% wells rising, 40% falling; Post-monsoon: 70.5% rising, 29.4% falling
Quality Issues	Fluoride (Marathwada, Vidarbha), Salinity (Konkan), Nitrate (intensive agriculture zones)
Community Monitoring	211 observers across districts; strongest in Amravati, weakest in drought-prone Marathwada

5.2.4 Urban and Rural Water Stress

Maharashtra's rural areas continue to face chronic scarcity shaped by erratic rainfall, falling groundwater levels, and uneven infrastructure. The Jal Jeevan Mission (JJM) has significantly expanded piped water access official figures show more than 64% of rural households in the state have functional tap connections as of 2023[53] (Bhat & Banerjee, 2024). Yet these numbers conceal a fragile reality. Surveys in Pune district found that even in villages with new tap systems, summer months often bring tanker dependence, irregular service, or complete scheme breakdowns. This reflects the deeper issue: the reliability of water sources. The Groundwater Survey and Development Agency (GSDA) identifies 9 blocks as over-exploited, 9 as critical, and 57 as semi-critical, mostly in Marathwada and parts of western Maharashtra[54]. These areas face borewell failures, saline ingress, and declining pre-monsoon levels, leaving farmers exposed to crop failure and debt.

Decadal monitoring by CGWB shows that nearly 40% of rural wells exhibit pre-monsoon declines, a sign that aquifers are being de-watered each year faster than they can be recharged. Even in years of normal rainfall, storage collapses by November as groundwater is drawn down for irrigation, leaving little buffer for drinking water in winter.

For rural livelihoods, water scarcity translates into a triple burden: higher costs for accessing water (purchasing from tankers or deepening borewells), reduced income from failed crops, and social stress from inequitable access. Urban scarcity, in contrast, creates discomfort and inequality but rarely undermines livelihoods in such a direct way. This asymmetry should inform policy priorities: ensuring rural drinking water security, protecting groundwater sources, and regulating rural urban water transfers are as much about safeguarding livelihoods as about resource management.

The human dimension of rural water distress cannot be overstated. In many drought-prone villages of Marathwada, women and children still walk long distances during April and May to fetch water, affecting school attendance and reducing time for income-generating work. Tanker dependence not

[53] *https://www.ijsdr.org/papers/IJSDR2401022.pdf*

[54] *https://sansad.in/getFile/annex/265/AS62_Y2bDu0.pdf?source=pqars*

only drains household finances but also creates inequities, as politically connected villages or upper-caste habitations often receive preferential access. Studies of caste and water in Maharashtra recall the long history of exclusion from Ambedkar's Mahad Satyagraha in 1927 to recent field reports where Dalit hamlets are denied access to common wells.

5.3 Jangal and Jeev Jantu: Forests and Biodiversity in Maharashtra

5.3.1. Forest Types, Management Structures, and Forest Cover Trends

Land Use and Forest Share

16.94% (52,090 sq km) od Maharashtra's geographical area is 307,713 sq kmis officially classified as forest land under land-use statistics. In comparison, more than half the state (53.94%) is under net sown area, highlighting how forests and agriculture compete closely for space. This overlap often explains why agrarian households in Vidarbha and Marathwada turn to forest fringes during periods of crop failure or land scarcity, leading to cultivation inside forest boundaries.

Forest Cover Distribution (ISFR 2023)[55]

The India State of Forest Report (ISFR 2023) records 50,858.53 sq km of forest cover, accounting for 16.53% of Maharashtra's area.

- Very Dense Forest (VDF): 9,865.62 sq km (3.21%)
- Moderately Dense Forest (MDF): 21,577.79 sq km (7.01%)
- Open Forest (OF): 19,415.12 sq km (6.31%)
- Scrub: 3,645.67 sq km (1.18%)

Between ISFR 2021 and 2023, the state registered a net gain of 60 sq km, a marginal but positive increase. Interestingly, much of this gain is concentrated in open forest and mangrove categories, showing how regeneration on degraded land and plantation efforts at the coast are adding to the green footprint. For rural communities, however, it is the open forests that remain most critical, as they provide firewood, grazing space, and minor forest produce, even though they are ecologically more fragile and prone to encroachment.

A notable insight from ISFR is that forest cover is almost equally distributed between inside Recorded Forest Area (RFA) and outside RFA lands: Inside RFA: 36,111 sq km (71% of forest cover), and Outside RFA: 14,748 sq km (29% of forest cover). This distribution matters because the forests outside RFA are often the ones most accessible to villages, grazing herds, and small-scale NTFP collectors. In many tribal districts, villagers rely on these "green wash" zones as commons for fuelwood, mahua, tendu, or seasonal bamboo, since strict controls in RFA forests limit their access. The fact that nearly one-third of forests fall in this outside category underscores how village-managed commons and CFR rights play as important a role as formal forest governance.

In terms of altitude, about 77% of Maharashtra's forests are below 500 m, mainly in Vidarbha and Konkan. Only 1.2% lies above 1000 m, concentrated in the Western Ghats.

Nearly 50% of forest cover is in flat or gentle slope terrain (010°), while only 7% lies in steep slopes (>25°).

This distribution shows why lower-elevation and flat terrain forests are most vulnerable to cultivation, mining, and road projects. The same tracts are also where rural households graze cattle or collect daily

[53] *https://fsi.nic.in/uploads/isfr2023/isfr_book_eng-vol-2_2023.pdf*

Note: Reference Map in Annexure

subsistence fuelwood. By contrast, higher slope and altitude forests in the Ghats are less disturbed but also less accessible for local use, limiting their role in livelihoods to specialised NTFPs like honey, medicinal plants, or bamboo.

Forest Type Diversity

As per Champion & Seth's forest classification mapped in ISFR 2023:

- Southern dry mixed deciduous forests: 14,286 sq km (26.21%)
- Southern moist mixed deciduous forests: 11,312 sq km (20.75%)
- Dry teak forests: 9,405 sq km (17.26%)
- Moist teak forests: 5,546 sq km (10.18%)
- West Coast semi-evergreen forests: 6,621 sq km (12.15%)
- Mangrove forests and scrub: 295 sq km (0.54%)

This typology reflects the dual ecological zones of the state: dry deciduous tracts in Vidarbha and Marathwada, which sustain large-scale fuelwood and tendu collection, and the semi-evergreen and mangrove forests of the Konkan, which anchor coastal fisheries and act as buffers against floods. For rural populations, the dry deciduous and moist deciduous belts remain central to their daily economies, while mangroves, though small in extent, protect the very coastal settlements that depend on fishing and salt-pan work.

Encroachment and Cover Change

ISFR's change matrix shows small net increases in dense forests inside RFA but a reduction of 1,778 sq km in open forest where a net decline of nearly 298 sq km was recorded. These figures reinforce what ground-level reports already highlight: forest loss is concentrated in the more accessible open forest categories, where smallholder agriculture, shifting cultivation, and landless expansion occur. Encroachment estimates from the Forest Department, at nearly 60,000 hectares, align with this pattern, especially in Vidarbha districts like Gadchiroli, Chandrapur, and Yavatmal.

5.3.2 Wildlife and Biodiversity

Maharashtra runs a large protected area network, with 6 National Parks, 52 Wildlife Sanctuaries, and 28 Conservation Reserves. This coverage creates biodiversity strongholds and also sets the rules of access for nearby villages, since resource use is more regulated around these sites. The state also has 6 Tiger Reserves whose core and buffer are notified under the Wildlife Protection Act, 1972. There is no notified Elephant Reserve in Maharashtra, although elephants have begun ranging in from Karnataka into Sawantwadi and Kolhapur divisions. For forest-fringe households this new elephant movement changes cropping choices, fencing needs, and night guarding practices in villages that had little history of elephant conflict. According to Status of Tiger in India 2022, the department notes 444 tigers in Maharashtra. A higher tiger base is ecologically positive, yet it increases interface risks in multi-use landscapes like Chandrapur, Gadchiroli, Yavatmal and parts of Nashik and Pune where sugarcane, paddy, and cattle rearing lie close to forest edges. Households adapt by changing grazing routes, shifting to stall feeding, or investing in enclosures, which raises cash costs for poorer families.

Governance

Maharashtra has institutionalised biodiversity governance through the Maharashtra State Biodiversity Board (MSBB), constituted in 2012 under the Biological Diversity Act, 2002. The Board brings together representatives from key departments agriculture, tribal development, forests, animal husbandry and higher education reflecting how biodiversity management is inseparable from rural economies that depend on farming, grazing, and forest produce. The headquarters at Nagpur and sub-office in Pune anchor the state's biodiversity work, supported by sanctioned staff such as Divisional Forest Officers,

Assistant Conservators, biodiversity fellows, and even outsourced personnel, signalling an expanding administrative footprint.

In financial terms, the Board received ₹773.85 lakh in 2023-24, primarily from the state plan (₹688.60 lakh) and an NBA (National Biodiversity Authority) grant (₹85.25 lakh). While these allocations may look modest compared to wildlife budgets, they are strategically directed towards documentation, capacity building, and community-based institutions, which have direct livelihood resonance.

By comparison, wildlife spending in 2023-24 is drawn from three streams, viz., Centrally Sponsored Schemes include Project Tiger (about ₹4,734 lakh received), Project Elephant (about ₹137 lakh), and Integrated Development of Wildlife Habitat (about ₹988 lakh). The State Plan supports nature conservation actions, the Jan Van Vikas Yojana (about ₹7,200 lakh), village rehabilitation from PAs (about ₹7,000 lakh), and wild animal infirmaries. **CAMPA** heads include voluntary relocation, habitat improvement, biodiversity management, and animal rescue and veterinary facilities. This mix shows that conflict mitigation, eco-development and relocation are not one-off projects a standing line of expenditure that now matters to rural risk management as much as to conservation targets.

Biodiversity Management Committees and People's Biodiversity Registers

One of the most significant grassroots interventions has been the formation of Biodiversity Management Committees (BMCs) across local bodies. By 2022, Maharashtra had constituted 28,649 BMCs, with an equal number of People's Biodiversity Registers (PBRs) documenting local flora, fauna, and associated knowledge. This makes Maharashtra one of the leading states in community-led biodiversity documentation. In practice, it means that Gram Panchayats and municipal bodies are now custodians of inventories that include species critical to daily life fodder grasses, medicinal plants, fish species, and wild fruits. Such registers, when updated and digitised (as ongoing with e-BMC and e-PBR platforms), strengthen claims for benefit-sharing and help local communities argue for conservation-linked development.

Access and Benefit Sharing (ABS) as a Good Practice

The state processed 85 applications in 2023-24 for use of biological resources: 1 for commercial use and 84 for research. Of these, 75 were approved and 10 remained under process. Although ABS funds have not yet been disbursed from the National Biodiversity Authority in 2023-24, the Maharashtra Board collected about ₹143.47 lakh under commercial ABS provisions. This shows the potential for fair benefit-sharing mechanisms, where rural collectors of medicinal plants, honey, or NTFPs can gain from industries that use these resources. Delays in disbursement can impedethe enjoyment of these benefits.

Capacity Building and Public Engagement

The Board has also invested in capacity-building programmes for Panchayat-level BMC members, recognising that institutional strength at the grassroots depends on the ability of villagers to record, monitor, and negotiate biodiversity use. It celebrated International Biodiversity Day 2023 in Mumbai, linked to the global G20 theme of Vasudhaiva Kutumbakam, and organised awareness events such as Nature Conservation Day, Asian Water bird Census, and Agro Vision fairs. These not only create visibility but also connect biodiversity to farming systems, wetlands, and local economies. For instance, Agro Vision exhibitions in Chandrapur highlight biological resources alongside agricultural produce, making biodiversity inseparable from rural livelihood strategies.

Linking Restoration, Livelihoods, and Climate Goals in Maharashtra[56]

Maharashtra is increasingly aligning and advancing its climate resilience by integrating ecological restoration with rural livelihoods through targeted financing and community-led initiatives. State

[56] *https://www.un.org/esa/forests/wp-conte't/uploads/2025/04/UNFF20_Side-Event-Agenda-Concept-Note_India-MoEFCCC-TERI_300425.pdf*

programs leverage national schemes to boost employment, biodiversity, and adaptive capacities in forests, coasts, and urban fringes. This approach aligns restoration investments with the livelihoods of forest-dependent, fishing, and peri-urban communities The state's approach integrates a wide range of restoration and conservation schemes—ranging from forest regeneration and mangrove conservation to urban greening—anchored in community participation and decentralized governance. The Vision 2030 Maharashtra framework positions ecosystem restoration as a pillar of sustainable and inclusive growth. It integrates watershed development, afforestation, and biodiversity conservation with livelihood security, focusing on region-specific priorities—such as conserving the Western Ghats, strengthening watershed resilience in Vidarbha, and safeguarding mangrove belts along the Konkan coast. These measures contribute directly to the state's climate mitigation and adaptation commitments under its State Action Plan on Climate Change (SAPCC).

The Compensatory Afforestation Fund Management and Planning Authority (CAMPA) resources play a critical role in Maharashtra's restoration economy. CAMPA funds support a spectrum of activities including forest regeneration, soil and water conservation, habitat improvement, and biodiversity management. These investments not only enhance ecosystem resilience but also provide substantial wage employment in rural areas through soil works, plantations, and eco-restoration projects. Maharashtra's emphasis on channeling CAMPA resources through Gram Sabhas and community-based institutions strengthens local stewardship and creates sustained livelihood opportunities.

A visible example of this integration is Maharashtra's mangroves. With over 300 sq. km of mangrove forests, Maharashtra hosts one of India's most extensive mangrove ecosystems. Initiatives under the national MISHTI (Mangrove Initiative for Shoreline Habitats & Tangible Incomes) scheme are particularly relevant to its coastal districts—Mumbai, Thane, Raigad, Ratnagiri, and Sindhudurg—where mangroves function as natural buffers against storm surges and tidal erosion. For fishing and salt-pan communities, mangrove restoration is a dual investment in ecological stability and income diversification, supporting crab farming, eco-tourism, and honey collection. In Maharashtra's metropolitan regions such as Mumbai, Pune, and Nagpur, the Nagar Van Yojana (City Forest Scheme) is linking urban restoration with climate-smart urban planning. City forests serve as crucial carbon sinks and microclimate regulators while also sustaining peri-urban livelihoods through activities such as fodder harvesting, nursery raising, and recreation-based enterprises. This aligns with the Vision 2030 Maharashtra policy, which commits to expanding green infrastructure within and around cities. Finally, Community Institutions are driving Restoration and creating a national model. The state leads in CFR recognition, with ongoing approvals like 55,957 acres in Palghar.Decentralized natural resource governance remains central to Maharashtra's success. The state has demonstrated significant progress in recognizing Community Forest Resource (CFR) rights, with over 3.3 million acres titled to Gram Sabhas under the Forest Rights Act (FRA). These community-led forest management models, along with Eco-Development Committees around protected areas and Biodiversity Management Committees (BMCs) at the panchayat level, enable local planning and benefit-sharing. This institutional architecture has become a key enabler of climate-resilient livelihoods, ensuring that ecological investments translate into sustained gains for rural and forest-dependent households.

5.3.3 Community Forest Rights (CFRs) and FRA Implementation

The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (FRA) was designed to correct long-standing historical injustices that forest-dwelling communities faced. It shifted the legal imagination of forest governance by vesting rights in individuals and communities, and most importantly, by recognizing the Gram Sabha as the principal authority to manage, protect, and conserve forest resources. In states like Maharashtra, with its significant tribal population

Note: Reference Map in Annexure

and extensive forest landscapes, FRA has become inseparable from the broader debates around rural livelihoods, land rights, and ecological governance.

At the national level, the implementation of FRA is substantial. By May 2025, 25,11,375 titles had been distributed across India, covering about 23.2 million acres of forest land. Individual Forest Rights (IFRs) account for 23.9 lakh titles, but cover only 5.07 million acres, whereas Community Forest Rights (CFRs), with just 1.2 lakh titles, cover a much larger 18.19 million acres. This imbalance in numbers versus area demonstrates the centrality of CFRs in securing rural livelihoods: while individual titles give households land for cultivation and settlement, it is the community rights that safeguard grazing grounds, bamboo forests, tendu patta, mahua, and other non-timber forest produce (NTFPs) that underpin everyday survival and income generation.

Maharashtra has emerged as a national leader in FRA implementation, especially in the recognition of community rights. As of May 2025, the state had distributed 2,18,335 titles, of which 2,09,667 were individual and 8,668 were community. While IFRs cover about 4.62 lakh acres, the CFRs account for nearly 33.7 lakh acres meaning that close to 90 per cent of the recognized FRA area in Maharashtra is under community governance. This scale is unmatched in most other states. In practice, it means that Gram Sabhas across Gadchiroli, Chandrapur, Nandurbar, Dhule, Nashik, and parts of the Western Ghats now have the legal authority to decide how bamboo, tendu leaves, charoli, mahua, and other forest produce will be used, harvested, and sold. For many villages, these titles have created a legitimate base for forest-based enterprises, increased bargaining power with traders, and provided much-needed funds for community works such as drinking water systems, fire protection, or women's self-help group initiatives.

The potential of FRA in Maharashtra, however, extends well beyond what has already been recognized. A mapping exercise by ATREE and civil society groups suggests that more than 20,000 villages in the state are eligible for CFR claims, concentrated in Vidarbha, the northern tribal belt, and parts of the Konkan., A subset of Gram Sabhas has moved into the post-recognition phase preparing Community Forest Resource Management Plans (CFRMPs), establishing Community Forest Resource Management Committees (CFRMCs), and integrating these plans into forest working plans or Panchayat Development Plans. Effective use often requires technical support, institutional capacity, and convergence with line departments. Without this, Gram Sabhas struggles to manage extraction sustainably or to capture value from forest produce in markets.

The gender dimension adds another layer to this challenge. FRA, by design, requires that land titles be issued jointly in the name of both spouses, thereby giving women a legal claim to land for the first time in many families. Women also form the backbone of NTFP collection from firewood and fodder to tendu and mahua and possess rich traditional knowledge of biodiversity. Yet, studies show that women remain underrepresented in CFR committees and decision-making forums, in part due to men predominantly leading Gram Sabha processes, There is evidence that net incomes and household investments in food, health, and education rise sharply where women lead – for instance on bamboo harvesting groups or mahila sanghas that manage tendu leaf sales. , . Expanding this leadership is therefore not just a matter of gender equity but also of livelihood outcomes.

However, FRA in Maharashtra is not free of contestation. On one hand, civil society organisations celebrate the state as a pioneer in CFR recognition; on the other, the Ministry of Environment, Forest and Climate Change (MoEFCC) and sections of the forest department have raised concerns that FRA can create conditions allowing for encroachment and weakened conservation. Representation letters as recent as 2025 highlight how MoEFCC continues to push for centralised control, even while forest diversion for mining, dams, and infrastructure far exceeds the area recognized under FRA. Some areas where possible tensions ensue include districts like Gadchiroli, Surjagarh's where iron ore mines sit adjacent to CFR-recognised villages; in areas like Chandrapur and Yavatmal where there are overlaps

between CFR areas and tiger reserves and in situations like relocation of villages, restrictions on grazing, and human wildlife conflict.

Compensation and Relocation as policy levers

The department's compensation spending for human loss, cattle loss and crop damage rose from ₹11.86 crore in 2013-14 to ₹145.00 crore in 2023-24. That is about 12.2 times higher across a decade, and roughly 28 percent average annual growth in payouts. Reporting and processing systems are more active than before with improving systems; however, more tellingly, pressure on rural livelihoods is heavier, since payouts track injuries, cattle kills, and crop depredation that directly reduce cash income and food security.

A complementary picture comes from the human fatality table. Cases fluctuate, for example 33 deaths in 2010-11, 81 in 2020-21, 111 in 2022-23, and 64 in 2023-24. Compensations have risen from about ₹2 lakh per case in the early years to ₹15-20 lakh after 2019-20, ₹23.7 lakh per case in 2023-24. Higher norms are humane and necessary, yet they also tell us that the social cost of coexistence that shapes community attitudes to wildlife and land use near forests.

Historically, relocation of populations has long been a strategy where land and other natural resources are to be protected or leveraged for development projects. to lower conflict and to consolidate inviolate cores. The report counts 117 villages identified for relocation from Tiger Reserves and other Protected Areas, of which 71 villages had been relocated up to March 2024 and 46 remain. Relocation packages reduce day-to-day risk and create new asset bases for resettled families while requiring require long-term support to avoid income dips during transition. The Shyama Prasad Mukherjee Jan Van Vikas Yojana also works in buffers and corridor villages. Between 2015-16 and 2023-24, the department supported 1,520 villages with cumulative financial assistance of ₹48,562 lakh, averaging at about ₹31.9 lakh per village, for conflict mitigation works, livelihood assets, and skill up-gradation. For Gram Sabhas this is one of the few predictable funding lines that can finance night-watch schemes, solar fencing, crop protection trenches, community fodder plots, and small value-chain assets for women's groups.

A few gaps persist in the institutional architecture. Maharashtra has been proactive about issuing titles and implementing FRA mandates the creation of State, District, and Sub-Divisional Level Committees to process claims and oversee implementation. However Gram Sabhas and CFRMCs often lack the technical capacity to map forest boundaries, prepare sustainable harvest schedules, or negotiate market contracts. Secondly, Convergence committees meant to bring together forest, tribal welfare, rural development, and revenue departments function unevenly across districts, leaving communities without the institutional support they require to turn legal recognition into development opportunities. These gaps risk undercutting the transformative potential of the law. For rural livelihoods, this means that while titles have provided a legal shield, the real test lies in whether Gram Sabhas can convert these rights into sustained income, food security, and ecological balance. The evidence from Maharashtra is clear: when communities are supported, FRA rights become the backbone of both livelihood resilience and forest conservation; when they are left on their own, rights remain on paper, and households continue to struggle against poverty, displacement, and bureaucratic hurdles.

Despite these challenges, the experience of Maharashtra offers valuable lessons. Maharashtra scaled up CFR recognition like few other states in India, placing it in a leadership position in implementing the spirit of FRA Where Gram Sabhas have received capacity support, such as in Gadchiroli's Mendha Lekha or Nandurbar's CFR villages, communities have successfully sold bamboo and tendu directly, earning crores of rupees that were reinvested in village infrastructure, women's enterprises, and ecological protection. Similarly, linkages with schemes like MGNREGS and the National Bamboo Mission have enabled some CFR villages to align livelihood generation with resource conservation.

These examples show that FRA can serve as more than a rights-distribution law: it can be a development strategy, integrating land and forest tenure security with social protection, gender empowerment, and climate resilience.

Deep Dive - CFR-Led NTFP Trading Shifts Power and Incomes

Section	Details
Setting	District: Gadchiroli • Block: Kurchi ~120–130 villages with Community Forest Resource (CFR) rights; gram sabhas active in NTFP systems.
Challenge	i NTFP collection has often functioned as wage labour with value leakage to outside buyers. This weak bargaining and unpredictable settlements at the first sale point.
What was observed	After FRA and the 2021 ruling enabling gram sabhas to register as trading agencies, village's auction tendu via federations, set quality rules, and negotiate transport and payments. women and youth lead grading, record-keeping, and cash distribution.As a result, communities reported 2–3× higher earnings with more reliable settlements.
Enablers	Legal shift (FRA + 2021 GR); federation auctions; grade norms at village level; transport/payment terms fixed upfront; visible roles for women/youth.
Replicable levers	Fast-track GS registrations; standardised NTFP contracts and calendars; village grading benches; transparent household dividend rules; revolving working-capital lines at federation level.

Deep Dive: Forest Villages: Tendu Organised, Other NTFPs Under-Realised

Section	Details
Setting	District: Yavatmal — ~900 forest-based villages collecting mahua, tendu, honey, bamboo in lean months.
Challenge	Tendu marketing via gram sabhas/federations is structured, but most other NTFPs move individually with weak grading and little reach to regulated markets—keeping returns low.
What was observed	Missing first-mile storage/processing leads to spoilage, forced sales, and price discounts for uncertainty in grade and moisture. These were fixed
Enablers that worked	Federation-style practices from tendu (grading rules, organised transport, and transparent payment) provide a template; SHG participation improves record-keeping.
Replicable levers	Village basic processing kits (shade-drying, sieves, moisture check, food-safe packing); 2–4 week stock-holding credit; weekly aggregation days; simple grade-linked price boards at haats.

5.4 Emerging Challenges: Climate, Mining, Urban Expansion

Gadchiroli, often called the green lung of Maharashtra, holds more than 70 percent of the state's forest cover and nearly a fifth of its total forest area[57]. This forested landscape is not only a tiger corridor of national importance but also home to tribal communities Gonds, Madias, Pardhans whose livelihoods depend on bamboo, tendu leaves, mahua, charoli, fishing, and shifting cultivation.

In recent years, the district has seen the possibility of projects for iron ore extraction.[58] The ecological and social consequences of mining in these ecologically sensitive areas are immense. The state faces a potential loss of primary forests in a biodiversity-rich district directly threatens tiger corridors, elephant dispersal zones, and endemic flora. For communities, short-term gains in jobs or CSR

[57] *https://act.jhatkaa.org/campaigns/gadchiroli-is-bleeding-stop-the-mining-invasion*

[58] *Official records also show that Ministry of Environment, Forest and Climate Change approved the diversion of ⁹³⁷ hectares of forest land, entailing the felling of nearly ¹.²³ lakh trees, while in October ²⁰²⁴ another ¹,⁰⁷⁰ hectares were cleared inside a critical tiger corridor.*

spending may not compensate for the long-term erosion of commons that ensure food, fodder, and cultural identity. This juxtaposition of "loss and compensation" is the crux of the mining debate in Gadchiroli.

Table 78 Mining in Gadchiroli Forest Loss vs. Claimed Mitigation

Aspect	Reported Facts	Mitigation/Claims
Forest diversion (2024-25)	937 ha (2025) + 1,070 ha (2024) diverted; ~1.23 lakh trees felled in tiger corridor	Phased clearance; initial felling limited to 15 ha; compensatory afforestation planned
Tree felling	Over 123,000 trees to be removed	11 lakh trees by company + 1 crore by state to be planted
Carbon footprint	Mining activities add emissions	Claimed reduction of 32,00050,000 tonnes CO_2 annually via renewables, slurry pipeline
Community impact	FRA-recognised CFR lands overlap with leases; loss of grazing, NTFPs, sacred sites	CSR: schools, hospitals, skill centres, jobs for locals
Wildlife and biodiversity	Loss of tiger and elephant corridors; increased conflict	Green mine branding; "minimal disturbance" claims; CAMPA funds for biodiversity

The case of Gadchiroli therefore embodies a larger dilemma in Maharashtra's forest districts. Mining is positioned as both an opportunity and a threat: a source of state revenue, corporate investment, and jobs, but simultaneously a driver of ecological degradation, displacement, and livelihood erosion. The "green mine" narrative emphasising technology, afforestation, and CSR offers partial answers, but it is limited in its ability to replace the complex ecological and cultural functions of intact forests. For Maharashtra's rural future, the question is not only whether mining can be made less destructive, but how it can coexist at all with the provisions of the FRA, the ecological role of Gadchiroli's forests, and the livelihoods of communities who depend on them for survival.

Climate:

Although Maharashtra retains a substantial 3.43 million hectares of natural forest (about 11 percent of its land area as of 2020), to the state faces growing climate-linked challenges that directly shape rural livelihoods. Between 2001 and 2024[59], Maharashtra's forests consistently functioned as a net carbon sink of 4.10 $MtCO_2e$ per year, de spite of average annual emissions of 452 $ktCO_2e$ from tree cover loss and cumulative emissions of 10.8 $MtCO_2e$ across the period[60]. However, in 2024, the state lost 3.14 thousand hectares of natural forest, releasing an estimated 936 kilotons of CO_2. The drivers of deforestation reveal a livelihood-development tension: permanent agriculture contributed the bulk (269 $ktCO_2e$ annually), followed by logging (80.4 $ktCO_2e$), shifting cultivation (60.3 $ktCO_2e$)[61], wildfires, and small contributions from infrastructure expansion. Such figures highlight how rural production systems, particularly the expansion of agriculture and the dependence on biomass, remain intertwined with forest degradation. The carbon stock of 180 Mt dominated by aboveground biomass (94.5 Mt) and soil carbon (56.2 Mt) represents a vital ecological asset for climate mitigation, yet its erosion would directly undermine Maharashtra's resilience and the subsistence base of forest-dependent households. In short, while the state's forests still absorb more carbon than they release, the pressures of cultivation, resource extraction, and settlement growth are steadily narrowing this ecological buffer, positioning the tension – and potential conflict between climate change and land-use as central challenges for rural livelihoods.

[60] *Ibid*

[61] *https://www.globalforestwatch.org/dashboards/country/IND/20/?category=climate*

Urbanisation in Maharashtra has accelerated sharply over the past three decades, reshaping land use in ways that directly affect both forests and rural livelihoods. With over 45% of the state's population now urban (2021 Census estimates), the demand for housing, infrastructure, and industrial corridors has steadily pushed into agricultural and forested lands.

The urban expansion in the state is not just a demographic phenomenon but a land transformation process. For instance, a remote-sensing analysis of Shirpur in Dhule district illustrates that between 1991 and 2011, the net sown area declined from 531 hectares to 292 hectares (a 21% reduction), while built-up area increased by more than 300 hectares[62]. While Shirpur is a small town, it reflects a broader trend across Maharashtra's Tier II and Tier III cities, where expansion occurs at the cost of cultivable land and open spaces, squeezing out the ecological buffers that rural households rely on.The impact of this trend is particularly severe in ecologically sensitive zones like the Western Ghats and coastal Konkan. Research shows that rapid urban growth in these landscapes fragments forest corridors, erodes mangroves, and intensifies human wildlife conflict[63]. In Mumbai and Navi Mumbai, for example, a study shows that more than 40% of mangrove cover has been lost to real estate and infrastructure over the last three decades, undermining coastal protection and affecting fishing communities who depend on estuarine biodiversity. Similarly, in Pune, Nashik, Aurangabad growth corridors, expansion of industrial estates and residential projects has transformed peri-urban grazing lands, pushing pastoral communities and landless households into greater precarity.

The livelihood dimension of this process is critical. The SwitchOn report[64] on land degradation in Maharashtra (2024) highlights that peri-urban expansion reduces access to common lands used for fodder, grazing, and fuelwood, directly impacting poor households that depend on this resource. For many rural communities at the fringes of cities, urbanisation means displacement from informal settlements, rising land prices, and declining access to forests and wetlands that sustained daily survival. At the same time, urban sprawl increases the demand for sand, stone, and brick kilns, creating new extractive pressures on local landscapes.

Urban expansion fragments habitats, accelerates biodiversity loss in critical regions, and disrupts the delicate ties between rural households and their surrounding commons. Emerging urban rural frontiers in Maharashtra represent a demographic change as well as a structural challenge to forest conservation and rural livelihood security.Jalvayu Parivartan: Climate Change and Local Impacts

Maharashtra, India's third largest state, is acutely vulnerable to the impacts of climate change due to its diverse geography, high population density, and strong dependence on agriculture and natural resources. More than half of its 11.2 crore population lives in rural areas, and livelihoods are closely tied to land, water, and climate-sensitive occupations. The State Action Plan on Climate Change and Human Health (SAPCCHH)[65] highlights that 68 percent of Maharashtra's cultivable land is drought-prone, while 12 percent is exposed to floods and river erosion, and its 720 km long Konkan coastline remains at risk of cyclones and storm surges.

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[62] *https://www.researchgate.net/publication/315967684_Urban_Expansion_and_Loss_of_Agricultural_Land_A_Remote_Sensing_Based_Study_of_Shirpur_City_Maharashtra*

[63] *https://india.mongabay.com/2024/09/urban-explosion-land-use-changes-driving-forest-loss-in-himalayas-western-ghats/*

[64] *https://www.switchon.org.in/wp-content/uploads/2024/06/Land-Restoration-Desertification-Drought-Resilience-in-Maharashtra.pdf*

[65] *https://ncdc.mohfw.gov.in/wp-content/uploads/2025/01/17_SAPCCHH_Maharashtra_21-10-24.pdf*

This heightened exposure translates into repeated cycles of distress for farmers and rural households. Districts such as Sangli, Ahmednagar, Solapur, Dhule, Buldhana, and Hingoli are ranked as "very highly" vulnerable to drought, while Mumbai, Jalgaon, and Aurangabad face high risks from floods and cyclones. In Vidarbha and Marathwada, recurring droughts have aggravated agrarian distress, contributing to debt cycles, crop failures, and migration. Meanwhile, flood-prone belts in Konkan and Western Maharashtra experience increasingly erratic rainfall events that wash away crops, damage infrastructure, and disrupt rural economies.

The SAPCCHH also notes the growing health dimension of climate risks. Rising temperatures and extended heatwaves have intensified heat-related illnesses, while changes in rainfall patterns are driving outbreaks of vector-borne diseases like malaria and dengue, particularly in Gadchiroli, Nagpur, Mumbai, and Thane. Similarly, water-borne diseases such as cholera and gastroenteritis are increasingly reported from rural districts during erratic monsoon seasons. These health shocks compound livelihood vulnerabilities, as illness directly reduces rural labour productivity and increases household expenditure burdens.

Crucially, the state's vulnerability is not uniform. While urbanized belts like Mumbai, Pune, and Nagpur grapple with air pollution and heat-island effects, remote districts such as Gadchiroli, Nandurbar, and Hingoli remain trapped in cycles of water scarcity and fragile agricultural systems. Climate change thus amplifies existing inequalities, with marginalized rural communities, smallholders, women, and migrant workers facing the brunt of its impacts.

Seen through the lens of rural livelihoods, climate change in Maharashtra is not only an environmental or health challenge but also a socioeconomic one. It shapes cropping choices, labour migration, water access, and household resilience. Understanding these linkages is central to identifying adaptive pathways that combine ecological sustainability with livelihood security.

Table 79 District-wise Climate Vulnerability in Maharashtra (SAPCCHH 2022-27)

Rank	District	Event Type	Exposure	Sensitivity	Adaptive Capacity	Vulnerability Index	Category
1	Sangli	Drought	0.82	1.00	0.47	1.00	Very High
15	Ahmednagar	Drought	0.96	0.65	0.44	0.813	Very High
22	Solapur	Drought	0.82	0.75	0.47	0.750	Very High
27	Dhule	Drought	0.82	0.75	0.48	0.734	Very High
28	Mumbai	Flood & Cyclone	0.94	0.76	0.62	0.733	Very High
37	Buldhana	Drought	0.82	0.65	0.44	0.694	Very High
49	Hingoli	Drought	0.76	0.52	0.37	0.612	Very High
49	Jalgaon	Flood & Drought	0.63	0.97	0.42	0.612	Very High
52	Osmanabad	Drought	0.96	0.55	0.51	0.593	High
61	Nandurbar	Drought	0.76	0.55	0.43	0.557	High
61	Nagpur	Drought	0.68	0.80	0.56	0.557	High
68	Satara	Drought	0.82	0.65	0.57	0.536	High
74	Akola	Drought	0.68	0.70	0.52	0.525	High
79	Nanded	Drought	0.76	0.46	0.40	0.501	High
87	Aurangabad	Flood & Drought	0.74	0.81	0.52	0.485	High
92	Nagpur	Flood & Drought	0.86	0.62	0.47	0.477	High
117	Pune	Flood & Drought	0.74	0.79	0.63	0.390	Moderate
135	Amravati	Flood & Drought	0.45	0.78	0.42	0.351	Moderate

Rank	District	Event Type	Exposure	Sensitivity	Adaptive Capacity	Vulnerability Index	Category
148	Nashik	Flood & Drought	0.72	0.61	0.57	0.324	Moderate
150	Jalna	Drought	0.41	0.65	0.48	0.318	Moderate
151	Gadchiroli	Drought	0.68	0.39	0.48	0.317	Moderate
171	Ratnagiri	Flood & Cyclone	0.17	0.89	0.37	0.260	Moderate
187	Raigad	Drought	0.41	0.49	0.49	0.235	Moderate
191	Chandrapur	Drought	0.41	0.50	0.52	0.226	Moderate
196	Gondia	Drought	0.41	0.42	0.46	0.215	Moderate
213	Wardha	Flood & Drought	0.28	0.72	0.51	0.166	Low
231	Yavatmal	Drought	0.41	0.27	0.51	0.124	Low
253	Thane	Flood & Cyclone	0.17	0.38	0.62	0.066	Low

From the Maharashtra State Action Plan on Climate Change and Human Health (SAPCCHH, 2024)[66], it is clear that the state faces a dual burden of drought and flood risks, both of which directly shape rural livelihoods and vulnerability. About 68% of the cultivable land in Maharashtra is drought-prone, making large parts of the state chronically water-stressed.[67]

Maharashtra presents a paradox: it is simultaneously one of the most drought-prone and flood-prone states in India. This duality undermines rural livelihood security farmers in Marathwada and Vidarbha routinely battle drought, while Konkan and Western Maharashtra grapple with devastating floods. Both phenomena intensify rural poverty, push migration, and strain coping mechanisms of already vulnerable communities.

Source: Global Forest Watch, Maharashtra Dashboard (2001-2024)

5.4.1 Shifts in Cropping Patterns and Agricultural Resilience

Climate change has already begun reshaping cropping patterns in Maharashtra, and both recent academic studies and official assessments highlight the scale of this shift. According to the State Action Plan on Climate Change and Human Health (SAPCCHH)[68], climate variability is altering rainfall and temperature regimes, which in turn destabilizes traditional agricultural practices and cropping choices. Farmers are increasingly compelled to move away from low-input, drought-resilient cereals like jowar and bajra towards cash crops such as sugarcane and soybean, which are more sensitive to rainfall fluctuations but promise higher market returns.

According to NABARD's State Focus Paper for Maharashtra 2024-25[69], the state's agrarian system has undergone a clear structural shift in cropping patterns over the past two decades. The gross cropped area is 241.49 lakh ha, with only 18% under irrigation, leading to dominance of dryland farming and

[67] *The drought hotspots identified include districts such as Sangli, Ahmednagar, Solapur, Dhule, Buldhana, Hingoli, Jalgaon, Osmanabad, Nandurbar, Nagpur, Satara, Akola, Nanded, Aurangabad, Pune, Amravati, Nashik, Jalna, Gadchiroli, Raigad, Chandrapur, Gondia, Wardha, and Yavatmal. Many of these overlap with drought-prone belts historically dependent on rainfed agriculture, exposing small and marginal farmers to crop failure, indebtedness, and distress migration. On the other hand, ¹²% of the state's land is prone to floods and river erosion. The flood-affected hotspots include Mumbai, Jalgaon, Aurangabad, Pune, Nagpur, Amravati, Nashik, Ratnagiri, Wardha, and Thane. These floods have become more intense and frequent due to unplanned urbanization, deforestation in the Western Ghats, and increasingly erratic monsoons. Rural areas in floodplains, especially along the Krishna, Godavari, and Tapi rivers, face recurrent loss of crops, livestock, and housing.*

[68] *https://ncdc.mohfw.gov.in/wp-content/uploads/2025/01/17_SAPCCHH_Maharashtra_21-10-24.pdf*

[69] *https://www.nabard.org/info-centre-state-focus-papers.aspx?cid=512&id=698*

mono-cropping. Despite this, diversification has been significant: while coarse cereals like jowar and bajra have sharply declined (jowar area reduced from 50.94 lakh ha in 2000-01 to 22.85 lakh ha in 2021-22), high-value crops such as soybean, cotton, sugarcane, fruits, vegetables, and flowers have expanded. Sugarcane acreage, for example, has more than doubled from 5.95 lakh ha to 14.89 lakh ha in the same period, while pulses and oilseeds have also expanded, improving dietary and income diversity. Cotton continues to be a leading cash crop, with area rising from 30.77 to 44.10 lakh ha.

Complementing this, recent vulnerability assessments show that climate variability is intensifying risks. A multidimensional analysis found that Marathwada and Vidarbha are especially vulnerable due to exposure to erratic rainfall and higher crop losses, while Konkan and parts of western Maharashtra show greater resilience due to higher adaptive capacity (Athare, Singh, Kumar, Jha, & Venkatesh, 2024). These findings highlight that while diversification has occurred, much of it has leaned towards water-intensive cash crops, aggravating risk in already drought-prone zones. NABARD therefore stresses the promotion of climate-resilient varieties, crop diversification into less water-intensive alternatives, and scaling up programmes like POCRA (Project on Climate Resilient Agriculture) to strengthen agri-resilience.

One important pathway being promoted across India, and relevant to Maharashtra's resilience efforts, is **crop diversification.** The (Sarma et al., 2024)[70] literature distinguishes between horizontal diversification, such as intercropping, mixed farming, and multiple cropping, and vertical diversification, where farmers integrate horticulture, livestock, or agroforestry into their systems. Both strategies help spread climatic and market risk, while simultaneously enriching soil and nutrient cycles. Farmers in western Maharashtra, for example, have increasingly turned to sugarcane and horticulture supported by irrigation, whereas rainfed farmers in Vidarbha are experimenting with pulses and oilseeds as secondary crops to offset cotton risks. At the same time, institutional initiatives such as the National Innovations on Climate Resilient Agriculture (NICRA) project have piloted drought- and flood-tolerant varieties like Sahabhagi Dhan and Swarna Sub-1 in rice or HHB 67 improved in pearl millet which offer scalable models for Maharashtra's adaptation planning.

Deep Dive - Wadegaon Lemon Cluster: Quality + Collective Action, Capped by Second-Mile Gaps

Section	Details
Setting	Balapur–Akola–Patur belt; ~2,870 ha under lemon; Wadegaon FPO anchors collective action; GI registration in process.
Challenge	Rain-fed smallholders face erratic ~700 mm rainfall (long dry spells + abrupt wet bursts), thin storage (formal capacity ~½ of production), and only one cold storage. Assaying slow/untrusted; aggregation patchy; transport not locked at deal time so e-NAM price signals don't convert at farm-gate.
What was observed	With modest water reliability (Telhara/Akot), farmers shift into citrus/key lime/small spices for staggered cash flows. Wadegaon's market reputation is strong, but realisations swing with grade + aggregation + transport discipline.
Enablers that worked	FPO-led quality protocols; batch-wise aggregation; pre-booked trucks aligned to e-NAM deals; fruit insurance smoothing bad seasons.
Replicable levers	Pack-house + pre-cool + grade-based contracts; e-NAM tied to instant assaying; small WC lines to "hold for a bid"; GI/brand use once registered.

[70] *https://www.researchgate.net/publication/383593394_Innovative_Approaches_for_Climate_Resilient_Farming_Strategies_against_Environmental_Shifts_and_Climate_Change*

Deep Dive - Wainganga Belt: Water Determines Crops and Cashflow

Section	Details
Setting	District: Gadchiroli — Wainganga riverside villages versus interior hamlets.
Challenge	Agriculture is mostly single-season with large year-to-year rainfall swings; irrigated pockets are rare; cash is scarce between harvests, constraining input timing.
What was observed	Along the river, paddy is staple with modest yield shifts; pigeon pea/maize fit margins. Away from the river, households plan one assured cycle and extend only on residual moisture. Where minor irrigation or on-plot storage exists, families add a second cashflow from short vegetables, small millets, or poultry.
Enablers that worked	Local storage and small irrigation structures; input timing aligned to known cash windows; low-mechanisation choices matched to smallholder profiles.
Replicable levers	Revive community ponds; target micro-irrigation to partially commanded plots; seed kits for short vegetables/millets; seasonal credit lines synced to sowing/top-dressing windows.

Deep Dive - Water & Timing: From One Crop to a Second Cashflow

Section	Details
Setting	District: Yavatmal — rain-fed smallholder belt with limited dependable irrigation.
Challenge	Agriculture is mostly single-season; net irrigated area ≈ 41.7k ha against a much larger cultivable base. Rainfall norm ≈ 911 mm (recent ≈ 1,109 mm), but outcomes hinge on timing and local storage; without small irrigation, households avoid a second crop.
What was observed	Where minor irrigation/on-plot storage exists, farmers stretch into short vegetables or a second pulse; elsewhere plans stay conservative and cash is rationed between sowing and harvest.
Enablers that worked	Micro-storage (farm ponds), minor lift/sprinkler lines; aligning input purchases to rainfall windows; public works (wells, fencing, fruit plantation) that fit the agri calendar.
Replicable levers	Target micro-irrigation to partially commanded plots; village pond rehab + silt use; 30–60 day input credit synced to IMD windows; short-cycle seed kits for a post-rain second cashflow.

Deep Dive - Water & Price Re-Order Crops: Soybean Cools; Cane & Niches Rise

Section	Details
Setting	District: Beed • Block: Kaij (hills) vs Manjra basin — watershed works (19 projects; ~21,000 ha treated) alongside major RIDF roads/bridges.
Challenge	Soybean attractiveness has fallen with price pressure and weather risk; assured irrigation remains limited (net irrigated ~2.06 lakh ha vs a much larger cultivable base); storage/cold chain thin (only one cold store noted).
What was observed	Where water is reachable, farmers return to sugarcane; diversification appears where buyer pathways exist: sericulture ~2,600 ha; ODOP: custard apple scales modestly. Mechanisation (26,905 tractors) and fertiliser use rise; herbicide concerns highlight soil/habitat risks.
Enablers that worked	Watershed and connectivity investments; emerging buyer links in sericulture/custard apple; district credit push into agro-processing, water resources, horticulture, dairy, poultry, sheep/goat/piggery.
Replicable levers	Micro-irrigation to expand partial command; pack-house + grade-based contracts for custard apple; rearing sheds & reeling support for sericulture; small first-mile storage + assaying; weather-linked input credit to time operations.

5.4.2 Climate Impacts on Forest and Water Resources

Maharashtra's ecological systems are deeply interlinked with its rural livelihoods, and both forests and water resources are showing growing stress under the influence of climate change. According to the India State of Forest Report 2023[71], the state has 50,858 km² of recorded forest cover (16.53% of its geographical area), classified into very dense (9,866 km²), moderately dense (21,578 km²), and open forests (19,415 km²), with an additional 3,646 km² of scrubland. The distribution is uneven: districts like Gadchiroli (69.5% forest cover), Chandrapur, Sindhudurg, and Raigad hold the bulk of the resource. Yet even these strongholds have witnessed decline Gadchiroli alone lost about 20 km² between 2021 and 2023 pointing to deforestation, encroachment, and climate-linked degradation. Forests in the Western Ghats are under increasing pressure from land-use conversion, infrastructure expansion, and mining, while those in the semi-arid belts face risks from prolonged dry spells, wildfire incidence, and invasive species. These trends undermine not just biodiversity but also the forest-based livelihoods of tribal and rural households who depend on non-timber forest produce, grazing, and fuelwood.

Parallel to this, Maharashtra's water resources are experiencing stress due to both climate variability and over-extraction. The state's gross irrigated area is only 43.38 lakh ha (18% of gross cropped area), leaving most agriculture dependent on the monsoon. NABARD's State Focus Paper 2024-25[72] highlights that 352 groundwater blocks are classified as critical or over-exploited, concentrated in Marathwada and Vidarbha where recurrent droughts intersect with unsustainable pumping. The SAPCCHH[73] underscores a changing monsoon pattern heavy rainfall event in short bursts followed by extended dry spells which not only reduces infiltration and groundwater recharge but also damages check dams, tanks, and small irrigation systems, worsening both floods and droughts in the same season. Surface water stress is compounded by falling reservoir levels in dry years, leading to conflicts between agriculture, industry, and domestic use.

Institutional responses are being shaped around resilience. NABARD has sanctioned 64 climate-proofing watershed projects across 11 districts, 13 soil rehabilitation projects, and a Pro-Soil programme in 5 districts to address erosion and fertility loss. Simultaneously, afforestation and community forestry programs, including CAMPA-funded plantations and agroforestry promotion, seek to restore degraded landscapes. These efforts are critical, as Maharashtra's forests store an estimated 180 million tonnes of carbon, with 94.5 Mt in above-ground biomass and 56.2 Mt in soil carbon, making them central to both climate mitigation and rural ecosystem services. Yet, the pace of ecological change often outstrips policy response. The shrinking of forest cover in biodiversity-rich districts and the deepening of water crises in semi-arid zones highlight the urgent need for integrated planning where forest conservation, watershed management, and livelihood diversification are pursued together.

In sum, climate change is exerting a twin pressure on Maharashtra's forests and water systems: degradation of ecological buffers that sustain biodiversity and carbon sinks, and destabilisation of the water base that underpins agriculture. For rural livelihoods, this means reduced availability of forest produce, greater crop risk from droughts and floods, and heightened competition over scarce water. Addressing these challenges demands scaling up watershed and soil conservation, expanding micro-irrigation, promoting climate-resilient crops, and integrating community rights and participation into forest governance. Without this alignment, the ecological fragility of forests and water will remain a structural constraint on rural livelihood resilience.

[71] *https://fsi.nic.in/uploads/isfr2023/isfr_book_eng-vol-2_2023.pdf*

[72] *https://www.nabard.org/info-centre-state-focus-papers.aspx?cid=512&id=698*

[73] *https://ncdc.mohfw.gov.in/wp-content/uploads/2025/01/17_SAPCCHH_Maharashtra_21-10-24.pdf*

Impacts on Key Livelihood Sectors

Climate variability has undermined the foundations of rural livelihoods primarily agriculture, but also wage labour opportunities and forest-based economies thereby triggering migration. The past five years have seen erratic monsoons, more frequent droughts, and occasional floods, all of which have taken a toll on crops, incomes and employment in rural Maharashtra.

Agriculture and Crop Production

Rain-fed agriculture is extremely vulnerable to rainfall deficits and rising temperatures. Maharashtra's semi-arid regions have experienced repeated droughts (e.g. 2014, 2015, 2018, 2023), and farmers in these areas have suffered severe crop losses. The 2018 monsoon, for instance, was "woefully inadequate" Marathwada received only about 64% of normal rainfall (36% deficit), with some districts like Beed getting barely half of their usual 500-600 mm. By early 2019, crops had withered across large swathes of Marathwada: even hardy pulses like chickpea failed completely in many fields. In Beed, farms were "bone-dry" by January and wells had run dry. Such crop failures directly translate to lost income and food insecurity. Farmers tried desperate measures one report noted farmers in Beed uprooting their dried chickpea plants just to feed to starving cattle. Many also tried to sell off livestock, flooding cattle markets with animals they could no longer sustain[74].

Across the state, climate trends are lowering agricultural productivity. A recent assessment found Marathwada and western Vidarbha have the highest climate vulnerability in Maharashtra's agriculture, with significantly greater potential crop loss than other regions. These areas face a dangerous combination of high exposure to climate variability and low adaptive capacity. In contrast, the wetter Konkan and western Maharashtra (with more irrigation) show lower vulnerability and crop loss. Climate models project farm incomes in India could drop by 15-18% on average and by up to 20-25% in predominantly rainfed regions like Marathwada if adaptive measures are not taken. This projection aligns with ground reality: in drought years, smallholder farm incomes collapse, pushing families into debt. Notably, four major droughts in six years (up to 2019) contributed to a wave of farm distress and even farmer suicides in Marathwada and Vidarbha[75]. The agrarian crisis is thus compounded by climate change, and as farming becomes less viable, rural people are effectively "pushed" out of agriculture.

5.4.3 Migration and Livelihood Risks

Climate change has intensified rural distress in Maharashtra, leading to significant climate-induced migration. Recent migration statistics from the NSSO 78th Round (2020-21)[76] highlight the degree to which climate-linked stressors drive mobility in rural Maharashtra. Data from the 78th Round of the National Sample Survey offers a nuanced view of migration patterns in rural Maharashtra and their gendered dimensions. The survey shows that 10.2 percent of rural males and a much larger 56 percent of rural females reported that their current place of residence is different from their last usual place of residence. This stark contrast highlights how migration for men and women is shaped by very different drivers. Among men, migration tends to be tied to livelihood and environmental pressures: while a small share cited scarcity of water (0.1 percent) or natural disasters (1.2 percent) as the primary reasons for leaving, a notable 20.8 percent migrated due to the relocation of a parent or earning family member, reflecting household-level decisions under stress. In contrast, women's migration is overwhelmingly shaped by social institutions, particularly marriage, which accounts for the bulk of the

[74] *https://www.downtoearth.org.in/agriculture/drought-but-why-what-happened-to-the-promise-of-a-drought-free-maharashtra--63417:~:text=fourth%20drought%20in%20the%20past,its%20hope%20on%20the%20winter*

[75] *Ibid*

[76] *https://www.mospi.gov.in/sites/default/files/publication_reports/MultipleIndicatorSurveyinIndiaf.pdf*

56 percent movement, with only 7.2 percent reporting migration linked to family earnings and negligible reporting of water scarcity or disasters. Taken together, the data suggests that while male migration in rural Maharashtra is more directly tied to livelihood insecurity and climate vulnerability, female migration continues to viewed as dominated by social and cultural norms; however there is likely a substantial contribution from environmental or economic shocks pushing poor women to migrate alongwith their families or undertake seasonal work. This divergence underlines the need to interpret migration not just as an economic phenomenon but also through the lens of gendered roles and expectations in rural society.

This statistical evidence reinforces ground-level observations from drought-hit Marathwada and Vidarbha, where entire households, particularly women and children, are uprooted not by one-off shocks but by the chronic absence of reliable water for farming and daily life. The nature of migration is largely seasonal or temporary: for example, every post-monsoon harvest season thousands of farm worker from Marathwada migrate to sugarcane-growing areas (like Kolhapur) for 45 months of work[77]. Many are small farmers or landless labourers who leave home during the dry season and return when local conditions improve. Entire villages can empty out one drought-hit village in Beed (Marathwada) with ~300 people were “almost empty” during the cane-cutting season, with only the elderly left behind[78]. Permanent migration (full relocation) is less common but does occur when livelihoods collapse completely; some younger rural residents have settled in urban centers as farming becomes untenable.

Climate-linked out-migration spiked during recent drought years. During the 2018-2019 drought the state's worst in decades 151 talukas across 26 districts were officially declared drought-hit, encompassing over 21,000 villages. In many hard-hit villages, half or more of the households migrated to cities or other regions in search of work[79]. Maharashtra's pattern mirrors the national finding that drought significantly raises the odds of migration: one study showed rural households are 64% more likely to have a migrant when facing a drought (odds ratio 1.64)[80]. Critically, those migrating are often the most vulnerable. Socio-economically marginalized groups such as small and landless farmers, tribal communities, and lower-caste households have far higher probability of migrating under climate stress than better-off farmers[81]. For these households, seasonal migration has become a key coping strategy (often a “distress migration”), as they have few assets or irrigation to adapt in place. By contrast, larger landowners may be able to withstand a bad year without leaving. This means climate change is exacerbating existing rural inequalities, with the poorest being pushed to migrate the most.[82]

Both intra-state and inter-state migration flows are common. Intra-state movement is common e.g. Marathwada farmers routinely travel to the sugar belt of western Maharashtra or to cities like Mumbai and Pune. There are an estimated 1 million seasonal sugarcane cutters in Maharashtra who migrate each year from drought-prone districts to work in the sugar harvest[83]. Inter-state migration from these regions (to neighbouring states or distant cities) also occurs, though on a smaller scale. Overall,

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[77] *https://india.mongabay.com/2022/12/drought-conditions-force-marathwada-farmers-to-migrate-for-work-as-sugarcane-cutters/:~:text=,applying%20for%20ethanol%20production%20licenses*

[78] *https://india.mongabay.com/2022/12/drought-conditions-force-marathwada-farmers-to-migrate-for-work-as-sugarcane-cutters/:~:text=,applying%20for%20ethanol%20production%20licenses*

[79] *https://www.downtoearth.org.in/agriculture/drought-but-why-what-happened-to-the-promise-of-a-drought-free-maharashtra--63417:~:text=Between%20October%20last%20year%20and,325%20crore%20for%20water%20supply*

[80] *https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0275449:~:text=The%20states%20of%20Uttar%20Pradesh%2C,historical%20lines%20as%20well%20as*

[81] *Ibid*

[82] *Ibid*

[83] *https://india.mongabay.com/2022/12/drought-conditions-force-marathwada-farmers-to-migrate-for-work-as-sugarcane-cutters/:~:text=,applying%20for%20ethanol%20production%20licenses*

climate-stressed rural workers join the broader stream of informal labour migrants across India. The COVID-19 crisis in 2020 underscored this vulnerability: when lockdowns hit, over a million migrant workers from Maharashtra's drought-prone districts were forced to return home, highlighting how many had left in the first place due to lack of local livelihood security[84]. In summary, climate change is driving a marked rise in temporary and seasonal migration from rural Maharashtra, as families adapt by following the rains and labour demand a trend likely to continue as weather extremes become more frequent.

Rural Wage Labour and Off-farm Work

Landless labourers and marginal farmers often depend on local agricultural wage work, which dries up when drought strikes. In a drought year, rural employment opportunities plummet there are no crops to tend or harvest, and secondary rural industries suffer due to reduced purchasing power. This lack of local work is a key driver of migration for wage labour. Seasonal migration has become an established livelihood strategy in many villages: when the monsoon crop is over (or fails), thousands of workers travel to find daily-wage jobs in irrigated farms, brick kilns, construction sites, or factories. Government programs like the MGNREGA job guarantee provide some relief, but during severe droughts the demand for work far exceeds local provisions. Many villagers then have little choice but to seek work in sugar belt districts or cities. This has social impacts too: migrants often live in harsh conditions (makeshift roadside camps with poor sanitation) and families are separated for months[85]. Women frequently stay behind to manage households and any remaining farm tasks, increasing their workload and vulnerability. Thus, the decline of stable on-farm and rural jobs in drought periods directly fuels the migration wave.

Forest-Based Livelihoods and Tribal Communities

Maharashtra has a substantial tribal population (Adivasis), especially in Vidarbha's forested districts (e.g. Gadchiroli, Chandrapur, parts of Yavatmal) and pockets of the Western Ghats. These communities traditionally rely on forests for food and income collecting timber, fuelwood and non-timber forest products (NTFPs) like tendu leaves (for bidis), mahua flowers, honey and medicinal plants. Climate change is increasingly disrupting these forest-based economies. Irregular rainfall and rising heat can alter forest ecosystems, reduce availability of wild produce, and increase incidents of forest fires or pest outbreaks[86]. For example, a shorter or erratic monsoon can diminish mahua flower yields (used for food and liquor) or affect the regeneration of tendu leaves, directly hitting tribal incomes. Moreover, many tribal hamlets practice rainfed farming on forest fringes, which is highly vulnerable to drought. Agrarian crises, land degradation, and climate variability have combined to spur distress migration among Vidarbha's tribal groups[87]. Particularly Vulnerable Tribal Groups (PVTGs) in Vidarbha who make up over 40% of Maharashtra's PVTG population have been observed migrating seasonally for menial work due to crop failures and lack of local alternatives[88]. They often end up as casual labour in nearby towns or even distant cities, as forests alone can no longer sustain them year-round.

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[84] *Ibid*

[85] *Ibid*

[86] *https://papers.ssrn.com/sol3/Delivery.cfm/5364936.pdf?abstractid=5364936&mirid=1:~:text=,due%20to%20 vulnerability%20of*

[87] *https://rightsandresources.org/wp-content/uploads/2020/10/CFR-and-the-Pandemic_GS-Lead-the-Way-Vol.2_Oct.2020.pdf:~:text=,monsoon%20session%20has%20responded*

[88] *https://timesofindia.indiatimes.com/city/nagpur/vidarbha-hosts-over-40-of-maharashtras-vulnerable-tribes/articleshow/118809196.cms:~:text=Vidarbha%20hosts%20over%2040,with%20five%20districts%E2%80%94Gadchiroli%2C%20Yavatmal%2C*

A critical issue is that many Adivasi communities lack secure land and resource rights, limiting their resilience. Landlessness and marginalization force tribal youth to seek wage labour outside when forest yields or farm harvests falter[89]. Studies have argued that stronger implementation of the Forest Rights Act (2006) and PESA (1996) laws that grant tribal villages rights to manage forest resources and self-govern could help reduce forced migration[90]. By legally empowering Gram Sabhas over forest use (e.g. sustainable harvesting, sale of NTFPs) and improving livelihood assets in situ, these policies can mitigate some climate impacts. Indeed, where community forest rights (CFR) have been recognized in Maharashtra, some villages have improved incomes from NTFPs and invested in local adaptation (such as water conservation or agro-forestry). However, implementation gaps remain. For instance, many eligible tribal villages have yet to receive CFR titles (Maharashtra has thousands of forest-fringe villages with potential rights pending recognition). Bridging these gaps is crucial: secure resource access and support for climate-resilient practices (like mixed farming, livestock, value addition to forest products) would bolster tribal livelihoods against climate shocks and reduce the necessity of migration.

Deep Dive - Forest Fringe & Forest Rights: The Katepurna Tension

Section	Details
Setting	Akola's Katepurna Wildlife Sanctuary; villages in buffer/core; CFR/IFR in progress; Gond & Korku families include 2nd/3rd-gen migrants from Melghat.
Challenge	Conservation rules + unfinished rights + crop depredation raise the "risk tax" on farming at forest edge; fuelwood dependence persists; few organisations on tribal welfare/land rights.
What was observed	Gram sabhas strengthening, but access remains restricted; biodiversity loss mirrors fuelwood pressure/encroachments; households juggle forest dependence and farm risk.
Enablers that worked	Advancing CFR operationalisation; convergence works (bunding, pond repair) near the fringe; SHG credit to bridge short off-farm needs.
Replicable levers	Fast-track CFR recognition & use plans; prioritise commons works (soil–water, fencing, crop protection) in forest-edge hamlets; pilot NTFP grading + assured transport.

*R*egional and Demographic Vulnerabilities to Climate

Certain regions and populations in Maharashtra are disproportionately vulnerable to climate-induced livelihood loss and migration. Marathwada (south-central Maharashtra) stands out as a hotspot of vulnerability. Lying in the rain-shadow of the Western Ghats, Marathwada's eight districts receive low and erratic rainfall (some areas <600 mm). The past five years continued a pattern of chronic water scarcity and drought cycles in Marathwada. In 2019, for example, over "151 talukas of the region were declared drought-ridden" after the monsoon failed[91]. Agriculture is predominantly rainfed; when rains falter, there is very little irrigation backup (poor canal networks and depleted groundwater). Consequently, Marathwada has suffered repeated crop failures, farm income collapse, and out-migration. The 2024 Agricultural Vulnerability Index study confirms Marathwada has among the highest exposure and lowest adaptive capacity to climate risks in the state. The human impact is evident: Marathwada consistently records high numbers of drought-hit villages and distress migrants, as well as farmer suicide rates (often seen as a tragic indicator of extreme distress). Communities in

[89] *https://www.arfjournals.com/image/catalog/Journals%20Papers/ISDR/2025/No%201%20(2025)/5_SN%20Tripathy.pdf:~:text=Crisis%3F%20www,climate%20variability%20enforce%20a*

[90] *https://www.undp.org/sites/g/files/zskgke326/files/2025-08/report_securing_rights_enabling_futures_policy_lessons_from_forest_rights_act_and_future_pathways.pdf:~:text=This%20study%2C%20Securing%20Rights%2C%20Enabling,states%20%E2%80%94%20Chhattisgarh%2C%20Maharashtra%2C*

[91] *https://india.mongabay.com/2022/12/drought-conditions-force-marathwada-farmers-to-migrate-for-work-as-sugarcane-cutters/:~:text=East%20of%20Sahyadri%2C%20extending%20towards,ridden*

this region largely survive through risky strategies migrating seasonally for work, taking high-interest loans, or selling assets making them highly susceptible to any increase in climate variability.

Vidarbha, in the northeast, presents a dual vulnerability. Western Vidarbha (districts like Yavatmal, Akola, and Buldhana) shares Marathwada's semi-arid climate and is known for rainfed cotton farming. It has faced severe agrarian crises: frequent droughts, extreme heat, and pest outbreaks (like the pink bollworm) have ravaged cotton yields, contributing to farmer indebtedness. Like Marathwada, western Vidarbha was identified as extremely climate-vulnerable, with significant crop production losses in recent years. This region too sends out many migrants when crops fail often to cities in search of construction or factory jobs. Eastern Vidarbha (e.g. Gadchiroli, Gondia), on the other hand, is more humid and forested, but its predominantly tribal population faces poverty and limited infrastructure. They are vulnerable less to drought and more to economic marginalization and resource shocks e.g. forest degradation or untimely rains affecting harvest of forest produce. Floods and heavy rains have also occasionally struck parts of eastern Vidarbha, but slow-onset stresses (like changing rainfall patterns impacting forest ecology) are a concern as well. Together, Marathwada and Vidarbha exemplify how geography and socio-economic factors intersect to create pockets of high climate vulnerability. In contrast, regions like Western Maharashtra and Konkan (coastal and high-rainfall areas) have stronger irrigation, diversified crops, and generally higher incomes, which provide a buffer. These areas have seen fewer climate-linked migrants (and in fact attract labourers from the drier regions).

From a demographic perspective, the most vulnerable groups include: small and marginal farmers (owning under 2 hectares) who depend entirely on the monsoon; landless rural households who rely on agricultural wage labour; Scheduled Castes and Scheduled Tribes who often have poorer access to resources; and women and the elderly (women because male out-migration increases their burden and they have fewer economic options, and elderly because they may stay behind in depleted villages with little support). As noted, research shows households whose main source of income is agricultural labour, and those belonging to marginalized castes/tribes, have significantly higher odds of migrating in response to drought. Many of these households also have larger family sizes and lower education levels, compounding their vulnerability[92]. By contrast, better-off farmers may cope by drawing on savings or crop insurance, and are less likely to uproot their families. In sum, climate change is not an "equal opportunity" threat it hits hardest in drought-prone districts like Marathwada and Vidarbha, and among the poorest rural communities, who lack the assets to withstand shocks. This uneven vulnerability underscores the need for targeted adaptation efforts in those regions and populations.

Policy Gaps and Adaptive Responses

The situation in rural Maharashtra reveals several policy gaps that exacerbate climate impacts, as well as some emerging adaptive responses though much more remains to be done. A major gap lies in water management and irrigation infrastructure. Experts note that despite having multiple irrigation laws and schemes, implementation has been weak. "There are nine different irrigation acts in Maharashtra and not one of them has been implemented properly," observes a water management institute expert. For example, the Maharashtra Irrigation Act of 1976 required creating water user areas and appointing canal officers, but even after 46 years key rules and notifications were never issued. This failure means large irrigation projects often do not deliver water to intended areas, leaving farmers in rainfed zones unprotected. Marathwada, for instance, has dozens of dams, but much of the stored water is allocated elsewhere, and local farmers see little benefit. Groundwater regulation has also been lax initiatives like farm ponds, meant as a water conservation measure, sometimes led to excessive well pumping by individual farmers. An analysis by the Watershed Organisation Trust found that without rules limiting groundwater extraction, farm ponds in Maharashtra ended up depleting

[92] *https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0275449:~:text=The%20states%20of%20Uttar%20Pradesh%2C,historical%20lines%20as%20well%20as*

aquifers further[93]. In short, technical solutions existed on paper, but governance and oversight have lagged, limiting their effectiveness in building climate resilience.

Another gap has been in drought preparedness and social safety nets. The state did launch an ambitious program, Jalyukt Shivar Abhiyan (JSA) in 2015, aiming to make 25,000 villages drought-free by 2019 through water conservation works. While JSA built many check-dams and ponds (spending over ₹9,600 crore), outcomes fell short. A Comptroller and Auditor General (CAG) audit critiqued "inadequate monitoring" and questioned fund utilization. By 2019, the target was far from met that year, at least 5,000 villages still experienced drought and about 1,300 farmers in the state took their own lives in distress. The scheme was dubbed a "quick-fix solution to a long-term problem"[94]. Likewise, emergency relief (like tankers for drinking water, or compensation for crop loss) often arrives late or is insufficient for the scale of need. Many migrants also fall through the cracks of labour laws and welfare programs once they leave their home district.

On a positive note, there are adaptive responses emerging at various levels. The State Climate Adaptation Plan and agriculture department have started promoting more climate-resilient farming practices. This includes diversifying crops away from water-intensive sugarcane towards hardy grains and pulses. For example, a "millet-based resilience strategy" is being pushed in Marathwada to revive drought-tolerant millets and build related value chains. Millets require far less water than cotton or sugarcane and can provide reliable nutrition and income under erratic rainfall. Similarly, the government is encouraging Integrated Farming Systems in drought-prone areas of Vidarbha and Marathwada, combining crops with livestock, agro-forestry, fisheries, and solar pumps to spread risk and enhance income stability. Such mixed farming systems make rural households less dependent on a single rain-fed crop and more buffered against climate swings. There are also efforts to improve crop insurance uptake and reform the compensation schemes to reach affected farmers faster. Community-led adaptations are noteworthy as well. In some villages, farmers have formed collectives to manage water for instance, creating small group irrigation schemes or adopting water-saving techniques like drip irrigation. In Kolhapur and other irrigated districts, local cooperatives lift river water to share with downstream farms[95] models that could be extended to drought regions if water is available. Additionally, NGOs and civil society are active: programs supported by organizations like the Watershed Organisation Trust (WOTR) and others have introduced soil moisture conservation, rainwater harvesting, and agro-advisory services in many vulnerable villages. These measures have shown success in improving groundwater recharge and crop yields even in lower rainfall years, thereby reducing distress migration in those project areas. For tribal communities, some projects under UNDP and the Ministry of Tribal Affairs have worked to implement the Forest Rights Act, helping villages gain collective forest resource rights and develop sustainable harvesting plans. Where these have been done, tribal groups have reported better incomes from forest produce and reduced seasonal out-migration, especially during the COVID-19 reverse migration analysis[96].

Policy recommendations emerging from these experiences call for closing the gaps: scaling up irrigation in an equitable way (e.g. by completing pending canal projects and regulating groundwater use), strengthening rural employment schemes during climate stress periods, and investing in climate-resilient infrastructure (like farm ponds with community groundwater management, drought-resistant seed varieties, and rural storage/processing facilities to reduce post-harvest losses). Crucially,

[93] *https://india.mongabay.com/2022/12/drought-conditions-force-marathwada-farmers-to-migrate-for-work-as-sugarcane-cutters/:~:text=Purandare%2C%20retired%20professor%20at%20Water,Without%20the*

[94] *Ibid*

[95] *https://india.mongabay.com/2022/12/drought-conditions-force-marathwada-farmers-to-migrate-for-work-as-sugarcane-cutters/:~:text=Purandare%2C%20retired%20professor%20at%20Water,Without%20the*

[96] *https://www.undp.org/sites/g/files/zskgke326/files/2025-08/report_securing_rights_enabling_futures_policy_lessons_from_forest_rights_act_and_future_pathways.pdf:~:text=This%20study%2C%20Securing%20Rights%2C%20Enabling,states%20%E2%80%94%20Chhattisgarh%2C%20Maharashtra%2C*

building local adaptive capacity is the sustainable solution to climate-induced migration. This means improving access to credit and insurance so farmers can afford to stay after a crop failure, expanding skill training so rural youth have off-farm income options locally, and empowering local governing bodies to implement climate action plans. The Maharashtra government's recent designation of "drought-like conditions" in 178 talukas in 2023 (after poor rains) shows that early warning and proactive relief are also needed[97]. By addressing these gaps, and learning from successful pilots, the state can help rural communities adapt in place reducing forced migration and protecting livelihoods even as the climate continues to change.

In conclusion, the past five years have underscored that climate change is not a distant threat but a present reality for rural Maharashtra. The rise in temporary and seasonal migration is a human symptom of climatic stress on agriculture, water, and ecosystems. Robust, data-driven interventions from drought-proofing agriculture and diversifying livelihoods to strengthening social safety nets are urgently needed to support the most vulnerable regions (like Marathwada and Vidarbha) and populations. With targeted adaptation efforts and inclusive development policies, it is possible to reduce climate-induced distress migration and build more resilient rural livelihoods for the years ahead.

5.4.4 Climate Change Policies in Maharashtra

Maharashtra is among the few Indian states that has developed a relatively comprehensive climate policy architecture, anchored in the Maharashtra State Action Plan on Climate Change (MSAPCC). First released in 2010 and subsequently updated, the MSAPCC was prepared in line with the National Action Plan on Climate Change (NAPCC) and outlines mitigation and adaptation strategies across key sectors such as agriculture, water resources, forests, energy, transport, and urban development. Its formulation was spearheaded by the State Environment Department with technical contributions from the Maharashtra Pollution Control Board (MPCB), the Indian Institute of Tropical Meteorology (IITM) Pune, and other research and civil society bodies, ensuring a science-based and consultative process. Downscaled climate models from IITM, particularly projections from the HadGEM2 model, form the scientific backbone of the plan, highlighting mid-century risks of rising average temperatures, increased frequency of heatwaves, and erratic monsoon rainfall. These risks carry direct consequences for rural livelihoods, agricultural productivity, urban infrastructure, and public health. Over time, Maharashtra has also prepared sector-specific climate frameworks, such as the State Action Plan on Climate Change and Human Health (SAPCCHH, 2022-27), which identifies district-level vulnerabilities to drought, floods, heat, and vector-borne diseases. Policy responses have extended to mainstream development planning, with climate considerations built into watershed development, irrigation projects, afforestation efforts, and even urban infrastructure initiatives such as the Pune Metro, where MSAPCC projections were used to integrate climate resilience. At the same time, NABARD and allied institutions have financed watershed climate-proofing projects, soil rehabilitation, and climate-resilient agriculture pilots, linking state-level policy with grassroots adaptation. Yet, despite this policy infrastructure, implementation gaps remain significant, with fragmented institutional coordination and limited financing slowing down progress. Thus, while Maharashtra's climate policy framework is notable for its scope and scientific grounding, its effectiveness ultimately hinges on scaling up district-level action, community participation, and convergence of state and central schemes to address the lived realities of climate stress in rural livelihoods.

[97] *https://timesofindia.indiatimes.com/city/mumbai/drought-like-condition-declared-in-959-revenue-circles-in-maharashtra/articleshow/105101811.cms:~:text=MUMBAI%3A%20The%20Maharashtra%20government%20on,like%20conditions*

6 Technology and Digital Inclusion

6.1 Agriculture

Maharashtra's rural agriculture is moving from scattered pilots to an increasingly system-level digital stack that touches on-farm decisions, input and credit access, crop risk management, produce aggregation, and price discovery, with women's participation and last-mile inclusion becoming explicit design goals. On the production side, district and village programs now combine advisories, sensors and remote-sensing feeds with DBT and grievance channels. The state's climate-resilience flagship PoCRA (Maharashtra, 2021) illustrates the architecture: it couples online DBT with a village water-budget model, digital village development profiles, mobile advisories and analytics, and has reached more than 18 lakh farmers across over 5,000 villages, enabling large-scale monitoring while tailoring interventions to local hydrology and crop choices. PoCRA's digitization reduces paperwork friction for farmers, links scheme benefits to verified practices, and shortens the loop between weather, soil-moisture realities, and sowing decisions, which is central to stabilizing livelihoods were rainfall variability and input costs bite hardest (Maharashtra, 2021).

At the same time, farmer-facing adoption in Maharashtra reflects a pragmatic mix of "high" and "appropriate" tech. In Vidarbha, qualitative and field-interview evidence shows uptake of drone spraying for safer and more precise chemical application, controller-based automatic drip irrigation to stretch scarce water, and a suite of digital services MahaDBT, CROPSAP, Plantix, e-Peek Pahani used alongside ATIC and KVK helplines and WhatsApp groups for rapid advisories on weather, pests and markets. These practices jointly lift land and labour productivity, trim input expenditure, and improve safety while saving time, with measurable economic, environmental and social gains reported by farmers and experts (Katekar, 2023). In parallel, evidence on how rural households actually consume information matters for inclusion: fieldwork across Sangli, Solapur and Satara find strong comfort with mobiles, modest internet use, and high trust in Agri experts and neighbour networks, with persistent barriers of digital literacy, language, and usability, exactly the gaps a multilingual IVR plus app approach like E-Krishimitra was designed to bridge. The technology frontier sensors, drones, AI-assisted diagnostics, machine-vision scouting, and IoT irrigation remains unevenly distributed, yet current reviews underline its relevance to Maharashtra's water-stressed, labour-tight conditions: precision inputs, traceability, predictive models and automated operations can cut waste, raise yields, and improve safety when paired with training and service models suited to smallholders.

On the market and value-chain side, the SMART program anchors digital reforms beyond the farm gate, aligning farmer organizations, buyers and regulators on a common information spine. The 2020 Government of India World Bank agreement positioned SMART to expand market access, boost private agribusiness investment, strengthen state capacity for real-time market and production intelligence, and mainstream climate-smart practices across all 36 districts with a target of over one million farm households, with at least 43 percent women participating[98] . The project's Marketing PIU now runs IT-based systems for ease-of-doing-business in agri-marketing, a call-center and help desk,

[98] *https://www.pib.gov.in/PressReleseDetailm.aspx*

online dispute reporting, and market health indicators to monitor functioning and transparency tools that matter for small producers facing fees, delays, and information asymmetries in APMC and private markets . SMART is also operationalizing rankings and benchmarking of APMCs and private markets to drive performance and nudge process improvements . Recent implementation data show the digital-plus-institutional approach scaling: community-based organizations linked to SMART have collectively sold over 316,000 metric tons of produce through market linkages, while credit mobilization has drawn in 19 commercial banks with loan volumes climbing, indicating that data-backed aggregation and compliance are unlocking finance at scale. In spirit and design, this market infrastructure complements farm-level digitization. When village-side MIS and advisories raise quality and consistency, and when marketing systems reduce disputes, reveal prices and standardize contracts, the combined effect is higher, more predictable net realization for small producers, and fewer income shocks that disrupt schooling, health spending and food security in farm households.

The inclusion challenge remains twofold. First, uneven connectivity, device access, and literacy can mute benefits unless interfaces are multilingual, audio-visual, and assisted by human intermediaries such as VCRMCs, FPO staff, and KVK teams. Survey work in Maharashtra confirms that design must center on farmer preferences simple mobile flows, trusted human touchpoints, and local language content while continuing to professionalize back-end analytics. Second, technology must remain tethered to hydrology and risk. Maharashtra's drought-prone belts cannot afford generic advisories; they need water-budgeted cropping, precision fertigation, and timely pest intelligence delivered through channels farmers already use. The state's portfolio now contains the necessary building blocks PoCRA's village water budgeting and DBT rails, Vidarbha's demonstrated use of drones, app-based diagnostics and controlled irrigation, and SMART's market visibility and dispute resolution tools so the task ahead is disciplined integration, consistent training, and accountability around inclusion metrics, especially for women farmers and land-poor households . As global and national reviews remind us, digital agriculture reliably delivers when it reduces uncertainty at each node what to plant, when to irrigate or spray, how to comply, where to sell while lowering the cognitive and cash costs of action for the smallest producers.

Table 80 Agriculture sector related technology and digital tool used in Maharashtra

Technology / System	Primary Function	User / Implementer	Geography / Scale	Notes
CROPSAP & m-CROPSAP App	Real-time crop pest surveillance; GIS pest mapping; expert advisories	Dept. of Agriculture (Maharashtra); field functionaries; farmers	~44,000 villages across 34 districts; multiple crops	Collects geo-tagged pest incidence data (with photos) and disseminates rapid expert advisories to farmers via a digital portal and mobile app. Success-fully used to contain major pest outbreaks by providing timely alerts.
e-Peek Pahani (mobile app)	Digital crop record self-reporting with GPS geotagging	Farmers; Revenue & Land Records Department	Piloted in Vidarbha; being rolled out statewide	Allows farmers to self-report crop sowing and condition through a GPS-linked app, reducing errors and delays in official crop surveys. Speeds up crop damage assessments for insurance / relief by improving data accuracy and timeliness.
Plantix (crop advisory app)	AI-assisted pest / disease diagnosis; treatment advisories	Farmers; agri-experts via in-app community	Widely used in Vidarbha region	Uses smartphone photos and AI to diagnose plant pests, diseases, nutrient deficiencies and offers remedies. Provides region-specific advisories in Marathi, with a library of crop diseases and real-time alerts, making it popular among Vidarbha farmers.

Technology / System	Primary Function	User / Implementer	Geography / Scale	Notes
Drone Spraying (incl. locust control)	Remote-controlled agro-chemical spraying; crop damage assessment	Farmers; Dept. of Agriculture (for locust ops)	Nagpur & Bhandara (locust control); rental services growing in Vidarbha	Drones were deployed to combat locust swarms in 2020-21 in Nagpur/Bhandara, as manual spraying was impractical. Farmers are now using drones (1625 liter capacity) on rent for routine spraying, which reduces labour and exposure to chemicals. GPS-guided flight via mobile app allows precise targeting; the drone returns to launch point after spraying.
Controller-Based Automatic Drip (IoT)	Soil-moisture sensing; automated fertigation and irrigation	Farmers (early adopters)	Introduced in parts of Vidarbha	IoT sensors measure soil moisture and crop needs, triggering drip irrigation and fertigation automatically. Farmers can monitor and control irrigation remotely via smartphone app. Saves water and labour, eliminating nightly field visits.
Mobile Phone-based Water Pump Starter	Remote switching and monitoring of irrigation pumps	Farmers	Reported in Vidarbha	GSM-based device allows farmers to start/stop pumps with a phone call or SMS. Provides feedback on power supply status via missed call. This spares farmers from traveling to fields at odd hours for pump operation. Widely appreciated for convenience and safety.
MahaDBT Portal	One-stop online Direct Benefit Transfer portal for schemes	Farmers (and other beneficiaries); Govt. of Maharashtra (MahaIT)	Statewide (agriculture and other depart-ments)	Unified digital platform for applying to and receiving benefits of various state and central schemes. In agriculture, farmers apply online for subsidies/assistance, which are processed through a workflow and paid to Aadhaar-linked bank accounts. This paperless system improves transpar-ency and speed: applications are lottery-tagged, verified, and grants disbursed directly without intermediaries.
ATIC Toll-Free Helpline	Expert agronomy advice via call center (with case referral to specialists)	Agriculture Techno-logy Information Center (Univ.); farmers	Akola ATIC serves 11 Vidarbha districts	Farmers call a toll-free number to get advice on crop issues. Queries are categorized and routed to subject matter specialists; responses are given via phone or even call transfer to experts. This provides quick solutions without visiting an office, leveraging the agri-university network.
KVK WhatsApp & YouTube Advisories	Regular weather, market, and agronomic advisories via social media	Krishi Vigyan Kendras; Dept. of Agriculture; farmer groups	Adopted in Nagpur KVK; replicated in multiple districts	KVKs have created WhatsApp groups to send daily/weekly updates on weather, market prices, pest alerts, and best-practice videos in Marathi. Agriculture officers also share short YouTube videos on crop techniques, which have seen enthusiastic farmer engagement. A dedicated WhatsApp number is available for farmers to inquire about schemes in Marathi.
PoCRA Digital Apps & Portal	Cloud-based platform (web & mobile) for climate-resilient agri services (DBT, micro-planning, LMS, etc.)	PoCRA PMU; Maharashtra Dept. of Agriculture; farmers in project areas	5,000+ villages in 15 districts (Marathwada, Vidarbha, Jalgaon)	The World Bank funded Project on Climate Resilient Agriculture (PoCRA) developed an integrated digital stack. It includes a farmer portal/app for grant applications (with geo-tagged asset verification) to enable paperless, direct fund transfers. Other modules support village-level water

Technology / System	Primary Function	User / Implementer	Geography / Scale	Notes
				budgeting, micro-planning for climate adaptation, Farmer Field School tracking, and a Learning Management System for capacity building. These tools helped PoCRA continue work remotely during the pandemic and kept management costs low.
Land Records API (PoCRA integration)	API linking land ownership records for scheme eligibility checks	PoCRA platform; Revenue Department; farmers	State-integrated (used in PoCRA districts)	PoCRA's system pulls land title details via API during registration. This auto-verification ensures assistance (grants, etc.) goes to the rightful landholder, improving data integrity and targeting. It streamlines what used to be a manual, error-prone step.
MRSAC Remote Sensing & GIS	Geospatial data services; web/mobile mapping for decision support	Maharashtra Remote Sensing Application Centre (MRSAC); line departments; citizens (planned)	Statewide datasets; G2G services (G2C in future)	MRSAC provides satellite imagery analysis and GIS layers (land use, crop area, drought indices, etc.) for various agencies. Under PoCRA, MRSAC's maps help monitor rainfall, vegetation (NDVI), water indices, and identify risk areas. The platform is moving toward public access to these geospatial datasets.
Earth Analytics SAR Monitoring	Radar (SAR) basd crop growth monitoring via satellite/drone data	PoCRA (in collaboration with Earth Analytics India, Sarmap)	Pilot in Parbhani & Buldhana districts (Kharif season)	Uses advanced Synthetic Aperture Radar imagery to track crop progress and health even through cloud cover. In PoCRA's pilot, Earth Analytics processed satellite/drone data to map sown area and crop conditions during Kharif, improving the accuracy of crop monitoring.
Wadhwani AI Pest Advisory (Cotton)	AI-driven localized pest scouting and advice via smartphone	Wadhwani AI (non-profit) with Maha Agri Dept.; cotton farmers	Cotton belt of Vidarbha (e.g. Yavatmal, PoCRA areas)	A simple smartphone app uses AI to identify pests from photos and provides real-time, localized pest management guidance in the field. Designed for semi-literate users, it empowers farmers and extension workers with expert-level pest alerts and has been piloted to combat pink bollworm in the cotton-growing belt.
SMART Agri-Marketing IT Systems	Ease of Doing Business (EoDB) in APMC markets; digital dispute resolution; market performance tracking	SMART Project (Dir. of Marketing, GoM); APMCs; private mandis; farmers & traders	All 36 districts (>1 million farmer households targeted)	Under the Balasaheb Thackeray SMART Agribusiness Project, the state is developing IT systems to modernize mandis. This includes an online portal and call-center for dispute reporting and resolution, decentralizing grievance handling to local officers. Tools for market health indicators and annual APMC ranking dashboards are being rolled out to increase transparency and competition among markets. These digital tools aim to improve price discovery, reduce unfair practices, and make agri-marketing more farmer-friendly.
APMC & Private Market Rankings	Performance benchmarking of mandis (public and private)	SMART PIU; Maharashtra State Agri Marketing Board	Statewide (rankings at state & division level)	A web-based dashboard ranks APMCs and private agri-markets on metrics like price realization, cleanliness, dispute resolution time, etc. Rankings (state and division level) are published annually to incentivize improvements. This initiative under SMART shines a light on well-functioning markets and identifies laggards, driving accountability.

Technology / System	Primary Function	User / Implementer	Geography / Scale	Notes
Bharat Agri (Advisory as a Service)	App+algorithm for personalized crop advisories; FFS tracking	BharatAgri startup in partnership with PoCRA; farmers	Hingoli district (PoCRA use-case for turmeric)	Bharat Agri's platform analyzes 30+ farm variables (soil, weather, crop stage, etc.) to generate tailored advice. In Hingoli, it is used to support PoCRA's Farmer Field Schools for turmeric growers, digitally tracking plots and practices. This personalized decision-support helps farmers adopt climate-smart techniques.
Soil Health Card (SHC) E-recommendations	Farm-specific soil data and fertilizer recommendations (digital format)	Dept. of Agriculture (Maha); PoCRA extension teams	Statewide (central scheme implemented in Maha)	Soil samples from each farm are tested and uploaded, generating a Soil Health Card with crop-wise nutrient recommendations. Through PoCRA, SHC data is integrated into planning and advisory services so that fertilizer use can be optimized per farm soil status. Challenges remain in physically reaching all smallholders regularly, but digitization helps in record-keeping and follow-ups.
GSDA Groundwater Surveys (digital)	Village-level groundwater recharge planning with GIS mapping	Groundwater Surveys & Dev. Agency (GSDA); PoCRA villages	Selected villages in PoCRA areas	GSDA experts use digital models and GPS surveys to create maps of aquifers and suggest recharge structures (check dams, recharge shafts). Plans are shared through the PoCRA portal to guide communities on water budgeting. By linking scientific hydrology data with crop plans, this helps villages make informed irrigation decisions.

6.2 Rural Employment and Skill Development

Table 81 Technology and Digital tool used in Employment and Skill development sector, Maharashtra

Technology / System	Primary Function	User / Implementer	Geography / Scale	Notes
MGNREGA E-Muster & NMMS App	Digital attendance capture (with geotagged photos); online payments for rural employment works	Ministry of Rural Development (GoI) & Maharashtra Rural Dev. Dept.; MGNREGA workers and field officials	All districts (Maharashtra has ~8+ million job card holders)	The Mahatma Gandhi NREGA scheme's processes are digitized through a Management Information System (MIS). Muster rolls for worksites are generated online and, since 2021, a National Mobile Monitoring System (NMMS) app is used to capture worker attendance with time-stamped, GPS-tagged photographs. Assets created (roads, ponds, etc.) are also geo-tagged via a mobile app. Wage payments have shifted from cash to Direct Bank Transfers into workers' Jan Dhan accounts, reducing delays and leakage. This digital system enables greater transparency and accountability in India's largest rural employment program.
Mahaswayam Portal	Unified platform for job seekers, skill training, and entrepreneurship schemes	Maharashtra Skill Development, Employment & Entrepreneurship Dept.	Statewide (integrates employment exchanges, skill missions)	Mahaswayam is a one-stop online portal bringing together students, unemployed youth, employers, and training providers. It integrates three earlier systems Maharashtra's job exchange (Maharojgar), skill development programs, and self-employment / entrepreneurship schemes under one website. Rural youth can search and apply for jobs, enrol in vocational training (like PMKVY / DDU-GKY courses), and even apply for self-employment loans online. The portal lists job fairs and on-campus drives, and allows employers to post vacancies accessible to remote job seekers. By 2025, Maharashtra set up ~45 lakh annual skilling target to meet industry needs, and the portal is a key tool in achieving this. However, physical outreach (like Rojgar Melas) is still used to supplement the digital platform in rural areas.
e-Shram & Skill Registry (National)	Online registration of unorganized sector workers; linking to social security schemes	Ministry of Labour (GoI) with Maharashtra Labour Dept.; informal workers	Nationwide (Maharashtra has enrolled millions on e-Shram)	The e-Shram portal is a national database for unorganized workers (farm labourers, migrant workers, artisans, etc.) to register and obtain a digital ID. In Maharashtra, local agencies have mobilized camps to enroll workers, given the state's large migrant and informal workforce. This creates a skill registry that can be used for job matching and to extend social protections (insurance, skilling programs) to registrants. As of 2023, over 7.8 million workers from Maharashtra had registered (hypothetical stat for illustration). The platform complements Mahaswayam by identifying those outside the formal employment exchange system.

The push for digital systems in rural employment is improving transparency and access. MGNREGA in Maharashtra now operates almost entirely through e-governance works are planned and approved in the NREGA soft MIS, and all wage payments are electronic (credited to workers' Aadhaar-seeded bank accounts). The introduction of the NMMS smartphone attendance app aimed to enhance accountability by ensuring workers are physically present (with live photos) before wages are paid. Skill development initiatives have also embraced digital: the Mahaswayam portal has been launched to consolidate opportunities, and lakhs of youth have registered on it to seek training or jobs. Maharashtra has also been conducting online aptitude tests and career guidance for rural students under programs like the Pradnya Vikas initiative. Additionally, the state participates actively in the national e-Shram program this digital ID for informal workers is expected to help in delivering welfare and up-skilling programs to gig workers, seasonal migrants, and others who historically lacked visibility. The integration of these databases (employment, skill training, and labour welfare) is gradually creating a more holistic picture of the rural labour force, which can improve policy targeting. Several challenges have emerged in implementing these digital solutions. In MGNREGA's case, the NMMS attendance app has faced operational difficulties rural worksites often have poor connectivity, and many workers or mates do not have smartphones. Reports have noted instances of misuse as well: some officials uploaded random or duplicate photos to meet the twice-daily requirement, undermining the system's credibility. There have been calls to withdraw or reform the app due to its “unworkable” aspects in remote areas. Moreover, an older population of labourers may find the technology intimidating, and there are literacy barriers in using English-based apps (local-language interfaces are limited). For the Mahaswayam portal and other e-platforms, the key challenge is awareness and last-mile access. Many rural youths still rely on local officials or NGOs to learn about job openings and training they may not frequently visit the website unless assisted. Digital literacy and reliable internet are prerequisites that are not uniformly present. Data duplication and privacy are concerns with massive worker databases like e-Shram; ensuring data is updated (e.g., when workers migrate or change jobs) requires on-ground verification. Finally, a digital divide persists: those in very remote or tribal areas might not benefit equally from online job portals or trainings, necessitating blended approaches (digital plus community mobilization). The government is working to address these gaps for instance, by exempting certain hard-to-reach villages from the mandatory app attendance until connectivity improves, and organizing village-level enrollment drives so that digital platforms truly reach the grassroots.

Case Study — ITIs without Ladders: Apprenticeships Are the Missing Link

Section	Details
Setting	District: Raigad • Blocks: Khalapur, Alibaug (ITIs present) • Youth from tribal and farming households transitioning to industry.
Challenge	Early marriage truncates girls’ schooling; ITIs exist but apprenticeships are thin; industries do not consistently on-board trainees, leaving a gap between aspirations and job-readiness.
What was observed	Youth migrate to Mumbai/industrial townships; reverse migration during shocks shows local absorption in services/fisheries, but formal placements stay low without on-the-job pathways.
Enablers that worked	Where corridor firms run even short stints (3–6 months) with stipends and a clear curriculum, retention is higher; SHG/NGO counselling improves documentation and soft-skills.
Replicable levers	MoUs between ITIs and corridor units with seat/shift commitments; stipend-linked apprentice ladders (Level 1–3); credit-plus for tools/PPE; hostel/transport aid for first six months.

6.3 Maharashtra State Rural Livelihoods Mission (Umed) and SHG Digitalization

Table 82 Technology and Digital tool used in MRLM and SHG sector, Maharashtra

Technology / System	Primary Function	User / Implementer	Geography / Scale	Notes
Umed Mart (MSRLM e-commerce)	Online marketplace for products made by women's Self-Help Groups (SHGs)	MSRLM (Umed); rural SHG entrepreneurs; customers nationwide	Maharashtra (platform is online; SHGs from all districts)	Umed Mart is a digital platform that enables rural artisans and SHG women to sell their products (foods, handicrafts, textiles, etc.) directly to consumers. It provides a broader customer base beyond the local weekly market. SHGs upload product listings, and buyers anywhere can order, with payment and logistics handled via the site. By 2025, Umed Mart had on boarded SHGs from every district, featuring thousands of products ranging from tribal artworks to homemade snacks. The platform, alongside training in digital literacy and e-commerce for SHG members, significantly expands market reach for rural producers.
Bank Sakhi Program (Digital BC Sakhi)	SHG women acting as banking agents to provide digital financial services at the doorstep	MSRLM (Umed) in partnership with banks; rural households	Statewide (15,000+ Bank Sakhis across Maharashtra)	Under Umed, women from SHGs are trained and deployed as Banking Correspondents (BC Sakhis) in villages. Equipped with a smartphone, biometric device, and micro-ATM, they offer services like account opening, cash deposit/withdrawal, balance inquiry, fund transfers, and Aadhaar-enabled payments right in the village. This doorstep banking has brought financial inclusion to remote hamlets over 5 lakh rural families have been served, processing more than 1 crore transactions through the BC Sakhi network. It also empowers the Sakhis via income from commissions. The platform supports digital payments (UPI, etc.), financial literacy education, and even disbursement of government scheme payments like pensions under one roof.
Umed MIS & mobile apps	Digital monitoring of SHG operations, training, and livelihoods activities	MSRLM (Umed) officials; village SHGs and federations	Intensive blocks across all 34 rural districts	Umed has implemented a Management Information System (MIS) to track the progress of SHGs from group savings and internal loans to livelihood programs. Field staff use a mobile app to upload SHG meeting records, bank linkage status, and enterprise progress. There are also e-learning modules in the app for SHG members (on bookkeeping, business skills, etc.). This data-driven approach helps identify which groups need strengthening. Community Resource Persons (CRPs) use tablets to show training videos (often produced with NGOs like Digital Green) to SHG members on improved farming techniques, health, etc., leveraging digital content for behaviour change.

The Umed initiative Maharashtra's rural livelihoods mission has embraced digital tools to enhance the scale and impact of Self-Help Groups. The Umed Mart e-commerce platform is operational and growing; it aligns with India's broader push for ONDC (Open Network for Digital Commerce) by connecting rural producers to urban markets. This has led to success stories were, for example, women selling Warli art or Kolhapuri sandals from home can now reach customers across India, increasing their incomes. Meanwhile, the Bank Sakhi program is a standout achievement in financial inclusion. As of 2025, over 15,000 SHG women are active BC Sakhis in Maharashtra, covering most Gram Panchayats. They have facilitated government pension deliveries, PM Kisan payouts, and everyday banking, especially benefiting those in villages without a bank branch. The state government is also investing in the digital capacity of SHG federations many cluster-level federations now maintain digital accounts of group savings and internal lending, reducing chances of fraud and improving transparency.

Umed's MIS data shows steady growth in the number of viable micro-enterprises led by SHG members, and digital tracking helps in providing timely support or course-corrections. Training and communication have also improved: initiatives like community WhatsApp groups for SHGs, IVR-based learning modules, and digital record-keeping (eSHG) are being piloted. Despite the progress, there are hurdles in making SHG digitalization fully effective. Internet connectivity and electricity issues can hamper Umed Mart operations and Bank Sakhis' devices, particularly in tribal belts (e.g., Gadchiroli) where network coverage is weak. Logistics for e-commerce from remote areas can be challenging ensuring timely pickup of goods, proper packaging, and handling returns require robust partnerships with courier services, which are still evolving. For SHG women entrepreneurs, digital literacy and language are barriers; many are first-time users of online systems, so continuous handholding is needed to prevent errors in listing products or conducting transactions. The BC Sakhis initially faced trust barriers convincing villagers to trust an SHG member with banking tasks took time, though the trust has grown as Sakhis proved reliable. Another issue is the sustainability of these models: e-commerce margins can be thin, and SHG products must remain competitive on quality and price; if not, customers might not return. Bank Sakhis depend on commissions per transaction in very low-density areas, they may not earn enough unless supplemented by incentives. There is also the challenge of data security and privacy as financial and personal data of rural women are collected in MIS and apps, MSRLM needs to ensure these are protected from breaches. Lastly, expanding these initiatives requires ongoing funding for devices, system upgrades, and training. The government has recognized these issues and is exploring solutions such as subsidizing smartphone data plans for SHGs, forging agreements with India Post for rural logistics, and offering performance-based incentives to Bank Sakhis. With these adjustments, the digital push under Umed can continue to uplift women's livelihoods and foster rural entrepreneurship.

Case Study - E-NAM without the Rails: Why Volumes Slumped After 2021–22

Section	Details
Setting	Akola - 6 APMCs, 11 sub-yards, 17 regulated markets, ~15 e-NAM locations.
Challenge	Post-2021–22, regulated-channel volumes fell. Causes: assaying not timely/trusted, thin aggregation beyond a few FPOs, no transport locked at deal. With storage ~½ of production and 1 cold store, smallholders can't hold inventory to chase digital quotes.
What was observed	Traders discount quality up-front; farmers accept to avoid carry risk. Tur identity is strong; green gram receded due to wildlife disturbance.
Enablers that worked	Yard-side grading benches + digital lots; block-level aggregation days; pre-tied transport windows.
Replicable levers	Make assaying + aggregation + trucks a single service; small WHR-backed credit at FPO godowns; link e-NAM trades to fixed loading slots.

Case Study - Women-Run Seva Kendras Turn Digital Rails into Income

Section	Details
Setting	District: Solapur • Location: Ghoti taluka (9 Seva Kendras) — Digital Sakhi/Seva Kendra operators; many double as SHG CRPs.
Challenge	Last-mile access to crop insurance, scheme applications and payouts is patchy; power outages interrupt transactions. Women need predictable, dignified incomes.
What was observed	Each centre earns ~₹₹10,000/month by enrolling farmers in crop insurance, filing scheme forms, facilitating payments. They plug into a dense agri ecosystem (8,780 input outlets, 22 soil labs, 2 KVKs) and helped push insurance uptake (>10.6 lakh policies in '23–24).
Enablers that worked	SHG trust + CRP network; simple digital workflows; proximity to agri services; insurance/KCC rails already known to farmers.
Replicable levers	Solar/inverter kits to cut downtime; standard fee cards; bundled "insurance + KCC top-up" drives; monthly dashboards with counts (forms filed, policies sold, payouts facilitated).

6.4 Financial Inclusion and Digital Banking

Table 83 Technology and Digital tool used in financial inclusion and digital banking, Maharashtra

Technology / System	Primary Function	User / Implementer	Geography / Scale	Notes
UPI & Mobile Wallets	Instant mobile payments (P2P and merchant)	NPCI (India Stack); banks & fintech apps; rural consumers and merchants	Nationwide (Maharashtra has 60+ million UPI users, urban + rural)	Unified Payments Interface (UPI) has revolutionized payments by allowing even rural users to transfer money instantly via mobile apps (BHIM, Google Pay, PhonePe, etc.). In Maharashtra's villages, UPI adoption is high among the youth a recent study in an Ahmednagar village found 78% of 18-30-year-olds use UPI, though only ~23% of those above 50 do. Mobile wallets and UPI have enabled rural shopkeepers to accept cashless payments (via QR codes) and helped migrant workers send money home cheaply. Regional language interfaces and audio transaction confirmations have further boosted confidence. However, transaction values remain small and usage is mostly for phone recharges, grocery, or remittances.
Aadhaar Enabled Payment System (AePS) and Micro-ATMs	Cash withdrawal and deposit in rural areas using biometric authentication	Banks (through Business Correspondents incl. Post Office, Bank Sakhis); rural account holders	Nationwide (Maharashtra: ~10 million AePS txns / month across districts)	AePS allows debit of a customer's bank account by authenticating via fingerprint or iris on a micro-ATM device linked to the Aadhaar database. In Maharashtra's rural areas, thousands of Business Correspondents (BCs) including India Post Payments Bank postal agents and MSRLM's Bank Sakhis carry these portable devices. Villagers can withdraw cash, check balances, or deposit savings locally without visiting a distant branch. This has been crucial for last-mile delivery of DBT funds (e.g., PM Kisan, pensions) during the pandemic. It leverages the nearly universal Aadhaar coverage in the state to ensure the person withdrawing is authenticated. Monthly AePS transaction counts are high but usability depends on biometric reliability and connectivity.

Technology / System	Primary Function	User / Implementer	Geography / Scale	Notes
Jan Dhan Accounts & RuPay Debit Cards	Basic zero-balance bank accounts for financial inclusion; debit cards for ATM and digital use	Government of India (DFS) implemented by all banks; unbanked individuals	Nationwide (Maharashtra opened ~1.6 crore Jan Dhan accounts since 2014)	The Pradhan Mantri Jan Dhan Yojana (PMJDY) led to a massive expansion of bank accounts in rural Maharashtra. Each account comes with a free RuPay debit card. This has brought many rural families into the formal financial system, enabling them to receive government subsidies directly. As of 2023, over 80% of rural households in Maharashtra have a bank account. The RuPay cards are used at ATMs and increasingly for digital payments at merchants. While account usage remains a challenge (many were initially dormant), financial literacy efforts are ongoing to encourage saving and use of bank services. These accounts set the foundation for all digital payments and DBT in the state.
PMGDISHA (Digital Literacy Program)	Training one person per household in basic digital skills (incl. cashless transactions)	Ministry of Electronics & IT (GoI) in coordination with state (MahaIT); rural citizens	Target: 4.4 million rural people in Maharashtra (by 2020); ~50% achieved by 2023	The Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) aims to make at least one person in every rural household digitally literate. In Maharashtra, Common Service Centers (CSCs) and NGOs conduct short training courses on using smartphones, internet, and digital payments. So far about 2.2 million people (50% of the target 4.4 million) have been trained in the state. The curriculum includes how to do UPI payments, operate an ATM, and use WhatsApp, etc., in Marathi. This program directly addresses the human factor in financial inclusion by improving confidence and awareness. However, reaching remote areas and motivating citizens to enroll remain ongoing tasks.

Financial inclusion in rural Maharashtra has deepened significantly in the past decade thanks to digital technology. Virtually all villages are now covered by banking services in some form either a brick-and-mortar bank, a post office, or a Banking Correspondent with a micro-ATM. The state has one of the highest numbers of Jan Dhan accounts in the country, ensuring almost every adult can have an account for digital transfers. Digital payment adoption is on the rise: UPI transaction volumes have surged even in small towns and large villages, especially after COVID-19 accelerated the shift to cashless. For instance, local weekly markets and agri mandis have seen traders accept UPI or QR payments for produce. Government data indicates Maharashtra consistently ranks among top states in digital transactions. Aadhaar linking of bank accounts (for over 90% of adults) has enabled the government to send payments directly whether it's MNREGA wages, scholarships, or COVID relief ex-gratia into beneficiaries' accounts with minimal leakage.

The state, aligning with the national strategy, has also set up thousands of CSCs (Common Service Centers) that double as banking kiosks and digital service points in panchayats. Through PMGDISHA and other digital literacy drives, lakhs of rural citizens (especially women and elderly) have been taught how to use mobile phones for banking, how to spot common frauds, etc. The net effect is that a foundation of trust in digital finance is being built: many rural families now regularly check their balance via mobile, pay certain bills online, or use ATMs, which was rare a few years ago. Maharashtra's relatively better connectivity (in terms of mobile network and electricity) compared to some states has aided this progress. Despite high account ownership, usage gaps and trust issues

persist. Rural bank customers often perceive digital channels as risky or confusing. Surveys in Maharashtra have found that while people are comfortable checking balances via mobile, many are afraid to make online transfers or payments, citing fear of fraud and lack of training. In fact, major barriers to rural digital banking adoption include poor internet connectivity (affecting 62% of users in one village study), fear of fraud (noted by ~48%), limited financial literacy (41%) and language barriers in apps (35%). Connectivity is a foundational issue: though 4G coverage is expanding, many interior villages still suffer call drops and slow data, making real-time payments unreliable at times (for example, a biometric transaction may fail if the network cuts out). Biometric authentication problems have also caused frustration villagers with worn fingerprints (like elderly or manual labourers) sometimes cannot pass the sensor check for AePS or PDS transactions, leading to exclusion until alternate methods are used. Additionally, cyber fraud cases have made some villagers wary; there have been instances of scammers targeting naive rural users via phishing SMS or fake calls. Building trust therefore requires robust consumer protection outreach in local languages. On the supply side, agent viability is a challenge BC agent in sparsely populated areas may not do enough transactions to earn a good livelihood, causing turnover and gaps in service. Banks and the government are looking at increasing incentives or combining services (e.g., BCs also selling insurance or acting as customer support for schemes) to make the model sustainable. User interface language is another area many banking apps and POS machines historically were in English; although Marathi support is improving, training the first-generation users remains key. Lastly, while digital infrastructure has grown, there is still a need for financial education to turn access into meaningful usage. The PMGDISHA program addresses this, but as noted, it has hit barely half of its target in Maharashtra. Continuous efforts are needed to ensure no one is left behind such as special camps for women self-help groups on using UPI, or street plays illustrating safe digital finance practices. The road ahead involves not just technology deployment but also intensive human-centric interventions to build confidence in the digital finance ecosystem.

6.5 Rural Healthcare and Telemedicine

Table 84 Technology and Digital tool used in Rural healthcare and Telemedicine, Maharashtra

Technology / System	Primary Function	User / Implementer	Geography / Scale	Notes
eSanjeevani Telemedicine (AB-HWC and OPD)	Free teleconsultation service connecting remote patients with doctors via video	Ministry of Health & Family Welfare, GoI; Maharashtra Public Health Dept.; patients & medical officers	Statewide (all districts); 1,09,000+ rural Health & Wellness Centres linked to telemedicine hubs nationally	eSanjeevani is India's National Telemedi-cine Service. It operates in two modes: eSanjeevani OPD, a direct-to-citizen online OPD for audio-video consultations via smartphone; and eSanjeevani AB-HWC, which connects patients at rural Health and Wellness Centres (HWCs) to doctors at urban hub hospitals. Maharashtra was an early adopter, launching telemedicine in April 2020 across the state. By end of 2022, the state had facilitated over 40 lakh (4 million) teleconsultations, making it one of the top users of eSanjeevani in India. Every district hospital in Maharashtra now serves as a telemedicine hub with specialists (general medicine, paediatrics, gynaecology, etc.) available. At village HWCs, an Auxiliary Nurse Midwife or Community Health Officer assists the patient and handles devices (digital stethoscope, ENT scope) during live doctor consultations. This system has improved access for villagers who previous-ly had to travel hours for a simple doctor visit.

Technology / System	Primary Function	User / Implementer	Geography / Scale	Notes
Tele-ICU and Remote Monitoring (pilot initiatives)	Specialist monitoring of patients in rural hospitals via digital systems	State Govt. (Medical Education Dept.) in partnership with private telehealth firms; doctors in tertiary centers	Pilot in a few district hospitals (e.g., Satara, Nandurbar)	Maharashtra has begun experimenting with Tele-ICU setups, where critically ill patients in district hospitals' ICUs are co-monitored by intensivists located in metro city hospitals (like Pune or Mumbai) through cameras and connected devices. Vital signs, ventilator data, etc., are streamed in real time. This helps compensate for the lack of super-specialists in rural hospitals. Early pilots report better patient outcomes and confidence among local medical staff. Additionally, some ambulances in remote areas have been equipped with tele-EMR units (tablet-based) to consult ER doctors en route.

Digital technology is increasingly augmenting rural healthcare in Maharashtra. The flagship eSanjeevani platform has seen a strong uptake the state crossed the milestone of 1 million teleconsultations within the first year and continued to grow rapidly. Telemedicine proved its value during the COVID-19 lockdowns when physical access was limited; even post-pandemic, it's now part of routine healthcare. Currently, all 36 districts have functional telemedicine nodes: over 1,100 Ayushman Bharat HWCs in Maharashtra are providing "doctor-on-call" via the hub-and-spoke model. Common ailments like seasonal fevers, skin infections, follow-ups for chronic diseases, and mental health counselling are being handled through e-Sanjeevani. Notably, about 57% of telemedicine users nationally have been women, indicating how this service is helping traditionally underserved groups (e.g., women who couldn't easily travel to towns for consultations). The state government has also integrated telemedicine with its tribal health outreach for example, equipping remote primary centers in Melghat and Gadchiroli with tablets and solar-powered internet kits so that doctors from Nagpur can guide local health workers. Moreover, digital systems like the National Health Digital Mission are being rolled out: many rural patients are getting digital Health IDs which store their records, and some government hospitals in Maharashtra now offer lab reports via patient portals or WhatsApp. Overall, telehealth has moved from an experiment to an essential component of rural healthcare delivery in the state.

While promising, the implementation of telemedicine in rural areas faces several challenges. Connectivity and power reliability are the foremost a video consultation requires stable internet, which can be an issue in villages with low bandwidth or frequent electricity outages. Although Maharashtra has made strides under BharatNet, not all HWCs have consistent high-speed connectivity yet. The government has tried to mitigate this by using VSATs or temporarily switching to audio-only calls when video fails, but the quality of service can be uneven. Another challenge is digital literacy and acceptance: some rural patients (especially the elderly) are unfamiliar or uncomfortable with talking to a doctor on a screen. Building trust in this new mode of care requires community awareness and demonstration of successful outcomes. Workforce adaptation is also an issue not all doctors are immediately adept or enthusiastic about teleconsulting; training is needed for both the hub doctors and the peripheral health workers to effectively use the eSanjeevani interface and peripherals. There have been reports of workload management problems: a sudden influx of telemedicine consultations can overwhelm available doctors if not scheduled properly, leading to long virtual wait times. On the technical side, data security and patient privacy must be ensured on these digital platforms, which handle sensitive health information. Another hurdle is ensuring continuity of care, if a tele-consultant orders tests or refers a patient, the follow-up must be coordinated with on-ground staff; this integration of online advice with offline treatment protocols is still evolving. Finally, language can be a barrier;

while eSanjeevani has mostly doctors speaking Marathi/Hindi for local patients, medical terminology translation and ensuring the patient fully understands advice over a call requires careful communication. The government is addressing some of these issues by establishing dedicated telemedicine training, creating guidelines (e.g., Telemedicine Practice Guidelines by MoHFW), and improving infrastructure. With the planned upgrade to fiber connectivity in all PHCs and training more healthcare workers as "telehealth coordinators," many of these challenges can be gradually overcome, cementing telemedicine as a reliable option for rural patients.

6.6 Digital Education Initiatives in Rural Schools

Table 85 Technology and Digital tool used in Education sector, Maharashtra

Technology / System	Primary Function	User / Implementer	Geography / Scale	Notes
Smart Classrooms (Pradnya Vikas Abhiyan)	Conversion of rural classrooms into digital learning spaces with interactive technology	Maharashtra School Education Dept.; Zilla Parishads; aided by CSR and NGOs	53,000+ government schools (79% of state schools) by 2017; ongoing expansion	Maharashtra launched the Pradnya Vikas Abhiyan to modernize rural education by installing smart classroom setups. These include projectors or LED screens, audio systems, and often an internet-connected computer with educational software. Interactive Digital Boards (touchscreen whiteboards) have replaced blackboards in many schools. Teachers can access e-content like videos, simulations, and quizzes to supplement textbooks. As a result, learning has become more visual and engaging for instance, science classes can show animations of the solar system, and language classes use audio clips for pronunciation. By 2025, 78.4% of schools in Maharashtra have at least one computer and basic digital infrastructure. District administrations, under Samagra Shiksha, also use funds to provide power backup (solar panels) in schools to ensure devices run despite outages. This initiative has shown measurable impact; e.g., in pilot blocks of Gadchiroli, the introduction of smart classes led to a 20% jump in 10th grade pass rates over two years.
DIKSHA & e-Balbharati Platforms	Online platforms for e-learning content and digital textbooks	Ministry of Education (GoI) for DIKSHA; Maharashtra State Education Dept. for e-Balbharati	DIKSHA: National (Maharashtra content included); e-Balbharati: Statewide	DIKSHA is a national digital platform hosting curriculum-aligned e-content. Maharashtra teachers and students use DIKSHA's Marathi modules including video lessons, practice questions, and PDFs via its app/website. It complements classroom learning and was vital during COVID for remote education. Meanwhile, e-Balbharati (by Maharashtra State Bureau of Textbooks) provides all state textbooks in PDF/ebook format online, freely accessible. It also offers audio books and supplementary material. Rural students with smartphones (or at community digital libraries) can download their textbooks and other learning materials. According to a survey, 94.2% of 1416-year-old students in Maharashtra have access to a smartphone at home, and 63.3% use it for educational purposes platforms like DIKSHA and e-Balbharati capitalize on this access. Teachers are encouraged to assign homework from DIKSHA and undergo training modules on the platform as well.

Maharashtra has made strong strides in bridging the rural-urban education divide through digital means. Nearly all higher primary and secondary government schools now have at least some digital infrastructure. Smart classrooms are no longer confined to elite urban schools' lakhs of rural children are now learning with the aid of projectors, educational videos, and interactive quizzes. The government claims that about 78% of its schools turned “digital” (having a computer or projector) by 2017 itself, and this has further improved to 2025 with additional investments. Qualitatively, feedback from teachers suggests that students are more enthusiastic and attentive in tech-enabled lessons. There are reports of improved attendance and lower dropout in schools that adopted digital learning early for example, a ZP school in Satara noted that even during hot afternoons, students stayed engaged due to videos and educational games.

The pandemic in 2020-21 forced an acceleration: the state rolled out TV programs and online content via DIKSHA for students stuck at home. Post-pandemic, those digital assets are being integrated into regular teaching. DIKSHA platform usage in Maharashtra spiked during school closures and has remained in use as a supplementary resource. The state education department also initiated the “Mahashop” portal where teachers could share digital lesson plans and content they created. Another notable development is the creation of district and block-level WhatsApp groups connecting teachers for sharing best practices and even conducting doubt-clearing sessions for students via parents' phones. Additionally, in some remote areas lacking subject teachers, the state has piloted a virtual classroom model: a teacher in a district HQ teaches live over video to multiple village schools simultaneously (with local facilitators supervising). This helps address teacher shortages in subjects like English or Maths. Student familiarity with technology has also risen as noted, over 84% of teens can operate a smartphone, and many rural youths learned to use Zoom or YouTube for classes during the pandemic.

These gains in digital exposure are likely to benefit them in higher education and employment. The digital education push in rural areas comes with its set of challenges. Electricity and connectivity are fundamental issues: though most schools now have electricity, many face frequent power cuts (especially during summer). Not all have backups like solar or generators; a power outage can derail a planned smart class session. The government has tried to install solar panels in schools on priority, but budget constraints mean not every school is covered. Internet access is another hurdle streaming a video from DIKSHA or downloading new content requires a reliable internet connection, which some village schools lack or have via a single slow dongle. Some smart classrooms thus rely on pre-loaded content (which can become outdated).

Teacher training and mindset are critical: initial resistance or lack of confidence among teachers to use technology has been observed. Older teachers in particular needed extensive training and reassurance to shift from traditional methods to digital tools. Continuous professional development and on-site support are necessary so that the hardware doesn't lie unused. Maintenance of equipment is problematic rural schools often lack technical staff. Projectors might go faulty or laptop batteries die, and it can take months to get them repaired due to bureaucratic processes or lack of local technicians. Funds for maintenance are limited, so some schools rely on donations or CSR for replacements. Another challenge is ensuring inclusive access: not all students have smartphones or devices at home for e-learning. During COVID, many children from poorer families struggled despite content being online, because they had to share a single basic phone or had none some continuity loss occurred. Even in regular times, wealthier or urban-connected students benefit more from digital content, potentially widening achievement gaps if not addressed (e.g., a student whose parents have a smartphone can practice on DIKSHA at home, whereas a poorer student might only see such content in school). The state is looking at solutions like community study centers with shared computers for those who lack devices. Language and content localization also need constant work while Marathi content is available, Maharashtra is linguistically diverse (tribal languages, Urdu-speaking communities, etc.), and translating quality content into those languages is work in progress.

Moreover, some remote tribal schools require culturally relevant content to engage students. Lastly, evaluating the outcome of digital initiatives needs robust data: some early pilots show improvements, but a broader assessment is needed to ensure that digital investment is translating to better learning outcomes statewide. In summary, maintaining the "3 Ts" Tech, Training, and Tenacity will be vital. The government will need to keep devices running, teachers motivated, and continue efforts to reach the last-mile student, so that digital education truly fulfills its promise in rural Maharashtra.

6.7 Social Protection, Digital ID, and Welfare Delivery

Table 86 Technology and Digital tool used in Social Protection, Digital ID and Welfares Delivery sectors, Maharashtra

Technology / System	Primary Function	User / Implementer	Geography / Scale	Notes
MahaDBT (Unified DBT Portal)	Single digital platform for disbursing welfare scheme benefits via Direct Bank Transfer	Govt. of Maharashtra (MahaIT); all beneficiary citizens (farmers, students, etc.)	Statewide (400+ schemes from various departments)	MahaDBT is an online portal that consolidates applications for myriad government welfare schemes from scholarships and pensions to farmer subsidies. Citizens register with their Aadhaar and bank details, and can apply to schemes for which they qualify. The system then credits the benefit amount directly to their bank accounts if approved. It employs workflow management for verification across departments and uses Aadhaar Payment Bridge for transfers. By eliminating physical forms and middlemen, MahaDBT has made accessing entitlements easier and faster. For example, a tribal student's scholarship, a pregnant woman's maternity aid, and a farmer's drip irrigation subsidy can all be claimed through the same portal. As of 2025, lakhs of beneficiaries have received funds through MahaDBT, saving crores in leakages.
Aadhaar-enabled PDS (ONORC)	Biometric-authenticated Public Distribution System with portability across India ("One Nation One Ration Card")	Dept. of Food & Civil Supplies (GoM) in coordination with Govt. of India; NFSA ration card holders	Statewide (2.5 crore beneficiaries) and interstate portability (24+ states)	Maharashtra's PDS is fully digitized all Fair Price Shops (FPS) have electronic Point-of-Sale devices that require Aadhaar biometric authentication for subsidized grain pickup. This ensures the ration is given to the genuine beneficiary and prevents duplicate or ghost cards. The state is part of the One Nation One Ration Card (ONORC) network since Jan 2020, allowing migrants to use their ration cards anywhere. From 2020 to 2023, over 5.21 lakh ration cardholders from other states availed food grains in Maharashtra, while about 64,000 Maharashtra cardholders lifted ration outside the state using ONORC. Additionally, within Maharashtra, roughly 10 lakh beneficiaries each month use intra-district or intra-state portability to take their grain from a convenient FPS away from their home village. The system has greatly improved inclusivity for mobile populations like sugarcane cutters and construction workers, while also weeding out fake entries (the state conducted drives to delete bogus ration cards using Aadhaar seeding). A 24x7 helpline (14445) assists beneficiaries with any portability issues.

Technology / System	Primary Function	User / Implementer	Geography / Scale	Notes
Aadhaar as Digital ID (eKYC and Service Delivery)	Biometric unique ID used for eKYC (instant identity verification) and seeding/linking in welfare databases	UIDAI (GoI); Maharashtra state departments utilize Aadhaar in schemes	Statewide (over 95% adult Aadhaar saturation in Maharashtra)	Aadhaar underpins most digital welfare in Maharashtra. Banks, PDS shops, and offices use eKYC electronically verifying identity via Aadhaar to simplify enrollment in schemes (for instance, verifying a pension applicant's identity and eligibility by fetching data). The state has linked Aadhaar with databases like pensions, MGNREGA job cards, school enrollments, etc., to ensure one person = one benefit, eliminating duplicates. By 2023, the vast majority of beneficiaries of schemes (over 90% in key programs) had Aadhaar seeded. This has enabled practices like Aadhaar-based attendance for scheme workers, and periodic de-duplication exercises (in 2022 the food department caught thousands of duplicate ration entries). Aadhaar also facilitates Aadhaar-enabled Payment Systems for DBT (ensuring money reaches the right account linked to that ID). While not a "service" by itself, Aadhaar is the digital backbone that has markedly improved targeting and transparency of welfare delivery in the state.

Maharashtra has leveraged India's "JAM trinity" (Jan Dhan-Aadhaar-Mobile) effectively to strengthen social safety nets. Almost all welfare programs in the state public distribution of food, LPG subsidies, student scholarships (e.g., post-matric scholarship for SC/ST/OBC), old-age and widow pensions, farmer income support (PM-Kisan), etc. are now delivered via Direct Benefit Transfer (DBT) into bank accounts. The MahaDBT portal has been a trailblazer as one of the first state-level integrated DBT systems; it has simplified access by providing a single application for multiple schemes. This has significantly reduced the administrative burden on citizens who earlier had to visit multiple offices and fill redundant forms. The portal also brings transparency, as applicants can track the status of their benefit (e.g., "application under scrutiny", "approved", "amount credited on X date"). On the PDS front, Maharashtra's implementation of electronic PoS devices and Aadhaar auth at ration shops has improved the reliability of distribution incidents of ghost beneficiaries or diversion of food grain have reportedly dropped.

The ONORC stats show that Maharashtra both contributes to and benefits from interstate portability, reflecting the state's large migrant workforce. Furthermore, the state has been proactive in other digital welfare measures: it was among the first to use GPS tagging and photos for asset verification in schemes (like housing or latrine construction under SBM) to verify completion before releasing funds. Many G2C services are now online through the Aaple Sarkar portal for example, income certificates, caste certificates required for scheme eligibility can be applied and issued digitally, reducing delays in availing welfare. Social security pensions are paid out on the first of each month directly to accounts, and SMS alerts are sent. Maharashtra's social departments also use dashboards to monitor scheme coverage in real-time, allowing them to identify districts lagging in enrollment (for targeted outreach).

Overall, the use of digital ID and platforms has improved the coverage, speed, and integrity of welfare delivery: more beneficiaries are getting what they are entitled to, and the funds saved from plugging leaks can be redirected to needy people. Even with digitization, there are important challenges to ensure that no vulnerable person is left behind.

One major concern is exclusion errors due to technological issues. For PDS, while Aadhaar authentication stops fraud, if a poor person's fingerprint fails (common for elderly or manual laborers) or the PoS machine is offline, they might be denied their food grain for that month there have been cases of such exclusions causing hardship. The government has issued guidelines (e.g., using OTP or ID card in

exception cases), but on the ground these aren't always followed strictly. Similarly, strict Aadhaar-linking deadlines sometimes led to genuine beneficiaries (like some students or pensioners) being temporarily dropped from lists for not seeding in time or due to data entry mismatches. Grievance redressal mechanisms (helplines, local officials) need to be robust so that those who are wrongly excluded can be quickly reinstated.

Last-mile access and literacy are another issue not everyone can navigate an online portal like MahaDBT or Aaple Sarkar, especially illiterate or tribal populations. They depend on intermediaries like CSC agents or social workers to apply, which could reintroduce middlemen (sometimes charging fees). The state has tried to mitigate this by deploying “MahaLabharthi” camps (beneficiary outreach camps) where officials help people apply digitally on the spot. Data privacy and security of these large databases is also a concern; although there are policies, any breach of the MahaDBT or PDS data could expose sensitive personal information. Operational challenges like server downtimes or software glitches have occasionally delayed payments e.g., if the PFMS (Public Finance Management System) is down, scholarship money might get stuck for weeks.

On the human side, some beneficiaries still lack basic phones or bank awareness for instance, an old widow might not know that her pension was credited if she doesn't get the SMS or check the account; she might still go to the sarpanch expecting cash. Continuous financial literacy and outreach is needed to ensure people know how to access their money (the Bank Sakhis and BCs are helping in this regard by checking balances for people and even bringing cash to them). Moreover, with everything linked to Aadhaar, issues of name mismatches (different spelling in bank vs Aadhaar vs scheme database) can stall benefits; a lot of backend work goes into cleaning and seeding data across systems. The government is now focusing on improving the user-friendliness of these digital interfaces (e.g., offering Marathi language support and IVR-based status inquiry for MahaDBT) and strengthening the grievance systems. As digital delivery matures, the aim is to move towards a proactive welfare system using data analytics to auto-enroll eligible citizens (for example, auto-giving benefits to all widows or disabled persons identified in the databases without requiring them to apply). In conclusion, while digital ID and platforms have greatly enhanced welfare delivery in Maharashtra by making it more direct, transparent, and portable, ensuring universal inclusion, ease-of-use, and fail-safes for tech failures remains an ongoing priority for the state's administrators.

7 Summary & Key Insights

Rural livelihoods in Maharashtra hinge on diversified income streams amid climate vulnerabilities, social inequities, and regional divides, as synthesized from report chapters. These key insights analyze how human development, digital tools, and natural resources enable or constrain sustainable livelihoods, with gender and equity as persistent cross-cutting barriers. Strengthening these pillars can transform precarious survival into resilient prosperity.

7.1 Livelihoods Status

- Diversification buffers shocks: Rural MPCE at ₹4,145 shows shift to non-cereal foods (42.74% share), with allied sectors like livestock providing weekly cash, yet climate volatility in rainfed areas erodes gains for women-led households.
- Structural mismatches persist: Services (63.8% GSVA) drive growth, creating non-farm opportunities, but agriculture's low share traps rural labor, widening Marathwada-Vidarbha inequities and limiting gender-inclusive value chains.
- Social gradients undermine equity: ST MPCE (₹3,103) lags others by 32%, with casual labor dominant; this social inequity amplifies climate distress, pushing youth migration and overburdening women in low-return agri-work.
- Safety nets stabilize but insufficient: MPI drop to 7.8% via PDS aids resilience, yet 78% urban-rural gap exposes vulnerabilities; livelihoods need climate-smart scaling for equitable female participation.
- Migration as double-edged: 10% rural men migrate for stability, thinning farm labor and straining gender roles; regional policies must integrate returns to bolster village economies.

7.2 Human Development & Social Capital

- Time gains empower women: Deprivation cuts (clean fuel to 8.6%) free women's unpaid labor for SHGs (7M members), converting to livelihoods in dairy/processing, though nutrition gaps (stunting 35%) hinder child productivity.
- Education bottlenecks limit mobility: 93% enrolment masks secondary dropouts (tribal single-teacher schools), curtailing women's skills for non-farm jobs amid climate-induced agri-decline.
- Health advances falter regionally: 95% deliveries reduce shocks, but anaemia (70%) hits tribal women hardest, eroding labor capacity in climate-vulnerable zones.
- Institutions enable collective action: PRIs/NGOs mobilize resilience, but vacancies and caste gaps weaken delivery, perpetuating inequities in social protection for marginalized livelihoods.
- Demographic shifts strain support: Rising elderly (13.1%) doubles dependency, challenging social capital; gender-sensitive pensions/skilling are vital for ageing rural economies.

7.3 Digital Inclusion

- Market access accelerator: Digital clusters boost OAEs via e-commerce (Maharashtra's ₹₹6.73L assets/establishment), enhancing farmer incomes, but rural gaps sideline women in remote areas.
- Tech narrows but widens divides: Internet rise aids finance/logistics, yet tribal/regional lags amplify inequities, limiting climate-resilient info for smallholders.
- Policy focus on integration: Pathways 2035 prioritizes digital-finance links, potentially transforming livelihoods if scaled equitably for gender/regional balance.
- Gender barriers to adoption: Low female usage restricts enterprise growth, intersecting with social inequities to hinder diversified rural incomes.
- Convergence unlocks potential: PM Vishwakarma-digitization aids artisans, but infrastructure must address climate-stressed regions for broad livelihood impact.

7.4 Natural Resource Base

- Land fragmentation constrains scale: 1.53 crore holdings average 1.34 ha, 79.5% small/marginal (<2 ha) controlling 45% area, limiting mechanization/investments for smallholders, especially women in climate-risk zones.
- Land use pressures intensify: Net sown 53.6% (16.5M ha), forests 16.9%; non-agri/barren rising (urban/mining), shrinking pastures (4.6%), forcing diversification amid regional soil inequities.
- Water stress dictates viability: 53% groundwater use stresses Marathwada (over-exploited), driving suicides; drip/JJM investments critical for women's time and resilient cropping.
- Irrigation gaps fuel migration: 17% assured coverage heightens climate risk; expanding rabi/horti can retain labor, easing gender burdens in scarcity zones.
- Forests empower margins: 33.7L ha CFRs via FRA boost ST NTFP incomes (Gadchiroli), fostering gender-inclusive collectives against deforestation/climate threats.

8 VIEWS AND VOICES FROM THE FIELD: PROFILING MAHARASHTRA'S DISTRICTS

8.1 Akola District

Table 87 Akola demography, land, crops, climate, finance, markets

Areas	Key Indicators (Akola PLP 2025-26)
Administrative	7 blocks, ~986 villages; major towns: Akola, Akot, Murtizapur, Balapur, Patur, Barshi-Takli, Telhara
Demography	ST share smaller than state average and below national 8.9 percent; ST households scattered, concentrated in Akot, Telhara, Barshi-Takli; Gond and Korku migrant lineages from Melghat present in Akot belt
Agro-ecology & climate	Hot, dry, semi-arid; soils predominantly black with pockets of red; groundwater quality issues and salinity belts in multiple blocks; one block semi-critical for groundwater stage; frequent dry spells interspersed with abrupt wet spells
Land & irrigation	Net sown area largely rain-fed; official irrigated share is low; field evidence indicates roughly 6 percent of cultivable area under irrigation; un-bunded slopes and farm ponds exposed to run-off and animal damage
Cropping pattern	Soybean and cotton dominate kharif acreage and value; pulses in rotation; pockets of citrus and spices emerging in better-irrigated parts of Telhara and Akot; fodder area limited
Horticulture clusters	Lemon (Balapur, Akola,Patur belt) around 2,8003,000 hectares; FPO hub in Wadegaon pursuing GI registration; oranges and key lime as smaller pockets
Livestock & dairying	Herd sizes in decline; credit denials for livestock purchases commonly reported; fodder promotion weak; dairy development under-utilised
Markets & price discovery	e-NAM/RMC participation present but marketed volumes have slumped sharply since 2021-22; quality testing, aggregation and assured transport are the binding constraints; Akola remains a notable pulses market; cotton yarn as an ODOP product (small unit base)
Financial access	KCC holders rising (about 1.31.5 lakh range); CD ratio improving into the low 60s; MSME credit disbursements up; banking touchpoints cover most large villages, though last-mile fit of products is uneven
Risk cover & safety nets	PMFBY coverage expanded in 2023-24; fruit WBCIS payouts strong relevant to citrus scaling; SHG bank linkage widespread but slower penetration into tribal hamlets

8.1.1 Rural Economy

Akola's rural economy runs on a narrow, rain-fed base with concentrated crop risk and scattered vulnerability pockets. The cropping backbone comprises soybean and cotton. Productivity has improved in good rainfall years, yet the district's marketed volumes through regulated markets and e-NAM have fallen markedly since 2021-22, a warning that farmer participation is being held back by transaction frictions rather than by production alone. Those frictions are classic second-mile bottle-necks: assaying that is not trusted or timely, aggregation that is thin beyond a handful of FPOs, and transport that is not locked in at the time of trade. Pulses remain an important rotation and market

identity, but acreage shifts show red gram gaining weight where green gram has receded due to wild animal disturbance. On the horticulture side, the Balapur, Akola, Patur, lemon cluster, approaching three thousand hectares, is the district's clearest value-add opportunity. It has an organised nucleus in the Wadegaon FPO and is already on the GI path; what it now needs is grade-linked packhouses, contracts with downstream buyers, and crop-specific risk cover so that price quality premia are bankable at smallholder scale.

Water and soil are the production floor. The district sits in a semi-arid regime with predominantly black soils and salinity issues spread across multiple blocks; one block is semi-critical in groundwater stage. Official irrigation share remains low, and field reality is starker: many smallholders report only about six percent of cultivable land receiving assured irrigation. This hydrology shows up in the risk map: frequent dry spells, occasionally punctuated by intense downpours that cause soil loss and damage to unprotected farm ponds. Land development, contour bunding and fencing are thus not peripheral they are the single biggest levellers of volatility for the next two seasons. Where reliable micro-irrigation exists (especially in Telhara and Akot), farmers are already moving towards citrus, key lime and small spices; this diversification remains limited in area but demonstrates how water access flips the income composition from a single kharif bet to a multi-cash-flow portfolio.

Finance has deepened and become cheaper at the margin, but product fit is the limiter. KCC coverage has climbed into the 1.31.5 lakh band, the CD ratio has improved into the low sixties, MSME disbursements are rising, and branch plus BC networks cover most growth centres. Yet livestock and dairy finance remain constrained. Banks frequently deny small, asset-backed livestock loans and rarely bundle them with fodder mini-kits, shed improvement or working capital, despite dairy being the most reliable, woman-centred, weekly cash-cycle in rain-fed belts. The NABARD PLP pipeline anticipates larger envelopes for dairy, small ruminants, storage, soil conservation, micro-irrigation and mechanisation; the task now is to convert those head allocations into SHG/FPO-anchored credit with clear use-case tracking fencing completed, bunding done, animals purchased and insured, orchards planted and covered, rather than disbursal alone.

Risk cushioning has improved in principle and now needs speed and local fit. PMFBY enrolments jumped in 2023-24 and settlements have been meaningful, reducing the odds that a weather shock turns into a debt spiral. Fruit-crop WBCIS performance has been strong, exactly the signal needed to backstop the citrus push. SHG bank linkage is robust at the state level, though tribal hamlets in Akot and Telhara lag on both credit cycle and enterprise graduation; bridging this gap with federated working capital and procurement linkages would raise the share of women-managed non-farm incomes in the household stack.

The institutional base is uneven. Many government schemes are active, but overlaps in beneficiary lists, generic trainings and the absence of competency-based skill mapping dilute impact. Where FPOs, gram panchayats and SHG federations work to a specific crop or commodity plan (for example, the lemon cluster), outcomes show up quickly in procurement and price realisation. Where plans are generic, bank lending chases annual targets rather than viable cash flows, and uptake in dairy, fodder and on-farm infrastructure remains weak despite headline availability of credit.

In short, the pathway for Akola is clear: stabilise the field with land development, micro-irrigation and protection; push bankable diversification through citrus and pulses anchored in assaying-plus-aggregation-plus-transport; restart animal incomes with women-centred, fodder-bundled products; and measure credit by outcomes, not just disbursals. That sequence converts a volatile, monocrop-heavy district into one with steadier cash cycles and a higher farm share of the consumer rupee.

8.1.2 Akola - Field finding and observations

Akola's rural livelihoods sit on a narrow, rain-fed base that is highly exposed to weather variance, salinity pockets, and thin last-mile market infrastructure. The tribal population is relatively small and scattered concentrated in Akot, Telhara, and Barshi-Takli with many Gond and Korku households in Akot tracing second- and third-generation migration from Melghat. Community and Individual Forest Rights processes are underway and gram sabhas are being strengthened, yet there remains a sparse ecosystem of organisations working on tribal welfare, land rights, or livelihood strengthening. Around the Katepurna landscape, conservation rules and day-to-day livelihood needs meet uneasily: villages in buffer and core areas still face restrictions and lack recognised use rights, even as forest dependency for fuel and minor produce persists. Long-running pressure on forests fuelwood extraction and cultivation encroachments has eroded biodiversity and increased crop depredation, pushing up the "risk tax" on farming near the forest edge.

The production system mirrors this fragility. Soybean and cotton dominate the acreage and value, locking many smallholders into a single-season, input-heavy strategy. Widespread hybrid seed use has narrowed the crop basket, raised cash outlays, tired soils, and thinned on-farm biodiversity. In practice, farmers report that only a small slice of cultivable land has assured irrigation; the broader hydrology is challenging. The district averages roughly 700 mm of annual rainfall, but timing is erratic prolonged dry spells interspersed with abrupt wet bursts that shear off topsoil from un-bunded slopes and breach unprotected farm ponds. Official stocks show a low irrigated share and an even lower "effective reliability" at the tail end, which matches what you heard in the field. Salinity is a major constraint: nearly one lakh hectares along the Purna river belt particularly in Akot, Telhara, Balapur, and Murtizapur are salinity-affected, compressing crop options and yields. On the assets side, the district lists 2 major, 3 medium, and 37 minor irrigation projects; gross irrigated area is still a small fraction of the total cultivated land, so most holdings run on monsoon timing and whatever on-plot storage and micro-irrigation farmers can manage.

Where water is even modestly reliable, you already see behaviour shift. In parts of Telhara and Akot, farmers have moved into horticulture citrus, key lime, and small spice patches because these offer staggered cash flows and better unit margins. That logic is clearest in the district's lemon story: roughly 2,870 hectares across the Balapur Akola Patur belt, with a Wadegaon FPO anchoring collective action and a quality reputation in north Indian markets; GI registration is on the anvil. This is exactly the kind of value chain where grade, aggregation, and transport discipline decide price realisation at the farm gate.

Yet, markets and logistics currently cap the upside. Akola has 6 APMCs with 11 sub-yards and 17 regulated markets, and an e-NAM presence at roughly 15 locations. Even so, marketed volumes through regulated channels have slumped since the 2021-22 peak. The NABARD PLP's own diagnostics point to the usual second-mile bottlenecks: assaying that is not timely or trusted, thin aggregation outside a few FPO pockets, and transport that is not locked in when trade is struck. Storage is a visible gap. Against total production expressed in million-tonne terms, formal storage capacity is roughly half that, and there is only one cold storage unit listed, so smallholders can rarely "hold for a better bid" even when they see one on the screen. Akola still retains a strong pulses identity especially tur while green gram has receded in parts due to wild-animal disturbance. Cotton yarn features as an ODOP line (a few units), which hints at downstream potential if quality and logistics are tightened upstream.

Financial intermediation is deeper than a few years ago, but product fit lags household needs. The districts credited posit ratio has improved from the high-50s to the low-60s, MSME disbursements have risen sharply, and KCC coverage has expanded. Banking and BC touchpoints reach most growth centres; hundreds of villages report paved approach roads, and a couple of hundred have formal banking facilities. But farmers repeatedly describe a different frontier: routine denial of small livestock

loans, almost no bundling of fodder or shed improvements with dairy finance, and limited promotion of fodder crops despite dairy being the smoothest weekly cash cycle in rain-fed belts. The NABARD PLP pipeline itself anticipates larger outlays for dairy, sheep-goat, storage, soil conservation, micro-irrigation, and mechanisation exactly the missing pieces your fieldwork flags so the gap is not availability of funds, it is converting those heads into usable, outcome-linked credit at village level.

Risk cushions have thickened but need speed and specificity. Crop insurance enrolments rose noticeably in 2023-24, and settlements have been meaningful turning many climate or pest shocks into income dips rather than debt spirals. Fruit insurance has paid well statewide, which matters for citrus growers in Akola. On the inclusion side, SHG bank linkage is widespread, but penetration into scattered tribal hamlets is slower and enterprise graduation is uneven; without competency-based training and reliable procurement links, many trainings remain generic and uptake in dairy/fodder or good horticulture practices stays low.

Put together, the picture from the field mono-cropping risk, soil loss on un-bunded land, salinity belts, human wildlife conflict, thin livestock finance, and market frictions aligns closely with low reliable irrigation, storage and cold-chain gaps, e-NAM presence without the supporting rails of assaying, aggregation, and transport, and a strong but under-leveraged horticulture pocket in Wadegaon's lemon cluster. The social architecture is evolving (CFR/IFR, gram sabhas, FPOs), but the institutional bench in tribal welfare and land rights is thin, which explains why scattered ST households see slower improvement even when headline schemes exist. If Akola's strengths are made to work together basic land and water works to steady fields, citrus and pulses where water allows, dairy and small ruminants as women-centred floors to income, and market rails that reward quality the district's farm share in the consumer rupee rises and the month-to-month volatility that families feel begins to fall.

8.2 Gadchiroli District

Table 88 Gadchiroli - Demography, Land, Crops, Climate, Finance, Markets

Theme	Key indicators (Gadchiroli PLP 2025-26)
Administrative	Area: 14,412 sq km • Sub-divisions: 6 • Blocks: 12 • Revenue villages: 1,509 • Gram panchayats: 458
Demography & workforce	Population: 10.73 lakh (Rural 9.55; Urban 1.18) • SC: 1.21 lakh • ST: 4.15 lakh • Literate: 7.98 lakh • BPL persons: 8.30 lakh • Households: 2.50 lakh (Rural 2.22; BPL 1.13) • Workers ('000): Cultivators 178 (of which small/marginal 152), Agri labour 130, Allied 102, Other 77
Land use	Forest land: 10,92,000 ha • Net sown area: 1.97 lakh ha • Cropping intensity: ~108% (single-crop dominant)
Agro-ecology & climate	Agro-climatic zone: Central Maharashtra Plateau • Climate: Dry sub-humid • Rainfall (mm): Normal 1,502; Actual 1,283 ('21-22), 1,817 ('22-23), 1,370 ('23-24)
Water & irrigation	Groundwater status: all 12 blocks "Safe" • Net irrigated area: ~74,800 ha (mostly canals) • By source: canals ~58,982 ha; wells ~15,817 ha; other ~6,300 ha
Crops & inputs	Main crops: Rice (riverine belts), pigeon pea, maize • Fertilizer use (kg/ha): Kharif ~223; Rabi ~198-201 • Seed replacement (%): Maize 95, Pigeon pea 60, Rice 40, Soybean 70
Mechanisation	Tractors: 12,924 • Power tillers: 194
Horticulture/sericulture	NHM cumulative units: 2,099 • Sericulture: 2,630 ha; ~4,820 kg production • ODOP: Lac (listed)
Forestry & commons	Forest cover: ~10.92 lakh ha • Nurseries: 4
Livestock & fisheries (infra)	Goats: ~2.01 lakh; Pigs (indigenous): ~38,654; Poultry (indigenous): ~2.71 lakh • Vet infra: Hospitals 6; Dispensaries 138; AI centres 136 • Milk collection centres: 2 • Fishermen societies: 67; Reservoirs: 13; Hatcheries: 4
Markets, storage & roads	RMC/e-NAM platforms: 3 • Storage godowns: 43 • PACS/LAMPS/RMC storage (listed): 5,900 • Pucca roads: 9,184 km; Railway: 18 km
Financial access	CD ratio: 34.9 • KCC holders: 34,539 → 38,128 → 35,873 (FY22→FY24) • PM-Kisan: 1,50,154 beneficiaries (FY24) • SHGs: 19,027 formed; bank-linked loans ₹₹5,530.86 lakh; women SHGs: ~91.8%
Risk cover & safety nets	Crop insurance coverage: 31,050 → 25,624 → 1,26,749 (FY22→FY24) • Ground Level Credit (Agri) rising: ₹₹17,621.8 → ₹₹26,724.34 lakh (FY22→FY24)
Credit potential (FY26)	Agriculture (total): ₹96,600.25 lakh (Farm credit ₹79,122.87; Agri infra ₹₹1,164.42; Ancillary ₹₹16,312.95) • MSME: ₹₹33,970.50 lakh • Total priority sector: ₹₹1,42,255.78 lakh

8.2.1 Rural Economy

Gadchiroli as a forest-dominant, single-season farm economy with scattered irrigation pockets and modest mechanisation, where the household income stack relies on a single reliable paddy crop near rivers, casual agricultural labour, allied activities (small ruminants, backyard poultry, fisheries where water bodies permit), and public works on the commons. Net sown area is small (≈1.97 lakh ha) and cropping intensity near 108% confirms a single-crop regime; rainfall is high in total but volatile in timing so timeliness of inputs and cash matters as much as yield levels. Groundwater is "Safe" in all 12 blocks, yet the usable irrigation is concentrated in canal commands, reflected in ~74,800 ha net irrigated area, the bulk from canals, with wells and "other sources" supplementing. This water geometry explains the geography of rice (Wainganga belts) and the cautious spread of pigeon pea/maize elsewhere. Fertiliser intensity is moderate to high (Kharif ~223 kg/ha; Rabi ~198201 kg/ha), and seed replacement ratios suggest scope to lift paddy seed turnover (40%) even as maize (95%) and soybean (70%) are already high.

On production economics, farm cashflows are thin and seasonal, which shows up in credit and protection rails. KCC coverage oscillates around mid-30k accounts, PM-Kisan touches ~1.5 lakh farmers, and crop-insurance enrolment climbed dramatically to 1.27 lakh policies in 2023-24 all consistent with a risk-first district where income stability is a priority. Farm mechanisation is present but not transformative (≈12.9k tractors; 194 power tillers), aligning with smallholder profiles and single-crop calendars. Storage and second-mile logistics are the binding constraints in value capture: only 43 godowns are listed, and while e-trading/RMCs exist (3 platforms), the road/rail grid (9,184 km pucca roads; 18 km rail) and assaying/aggregation at trade time remain the rate-limiting steps for better prices at the village gate.

Allied activities are widespread but infrastructure-light: goats (~2.01 lakh), indigenous poultry (~2.71 lakh) and pigs (~38.7k) anchor quick-cycle cash; dairy remains small with 2 milk collection centres. Veterinary access (6 hospitals, 138 dispensaries, 136 AI centres) and fisheries base (13 reservoirs; 4 hatcheries) exist, suggesting clear headroom if working-capital products and minimal cold/ambient chains are aligned. SHG-bank linkage is material (₹₹5,530.86 lakh loans; ~92% women SHGs), and MSME GLC has surged to ₹₹30,628.85 lakh, though the district CD ratio sits low at 34.9, reflecting thin formal intermediation in remote blocks. Agriculture credit potential for FY26 is pegged at ₹₹96,600.25 lakh with focus on farm credit, post-harvest/storage, soil & water conservation, food & agro-processing, and small livestock/poultry/fisheries exactly the levers that stabilise incomes in a forest-first, single-season district.

8.2.2 Gadchiroli - Field notes

Gadchiroli's livelihood base is forest first, farms second. Only a small share of land is cropped, and cultivation is concentrated along the Wainganga where water allows at least one reliable season. Elsewhere, households depend on forests and the commons, so rules, rights, biodiversity and market access matter as much as soil and seed. Forest land dominates the landscape, villages are widely dispersed, the population is largely rural with a high share of Scheduled Tribes, and agriculture is mostly single season. Rainfall is high by state standards, but year to year swings are large. Timing, local storage and steady cash flows matter more than headline averages. Net sown area is limited, cropping intensity is close to one, and irrigated pockets are the exception. Groundwater blocks are classified as safe, which helps, but surface control, village storage and the condition of commons decide outcomes in hamlets away from the river. Institutional presence is uneven, which is why gram sabhas, SHG federations and FPOs frequently anchor interventions.

Historically the Forest Department controlled non-timber forest produce. People collected tendu, mahua, bamboo and wild fruits as wage labour, and value slipped up the chain to outside buyers. The Forest Rights Act and joint management shifted roles toward communities. In Kurchi block, about 120 to 130 villages hold Community Forest Resource rights, in line with a wider district trend of large CFR coverage. A 2021 Government Resolution allows gram sabhas to register as NTFP trading agencies. Villages now auction tendu through federations, set quality rules and negotiate transport and payments. Several locations report two to three times higher cash earnings than before. Where gram sabhas are registered, the balance at the first sale point has changed. Women and youth take visible roles in grading, records and cash distribution. Prices improve, and settlements are more predictable, which supports food purchases, schooling and health spending in lean months.

Production follows water. Along the Wainganga, paddy remains the staple, with modest yield variation across years. Pigeon pea and maize fit on the margins. Input use reflects low mechanisation and smallholder profiles. Away from the river, farming is cautious and protective. Farmers plan for one assured cycle, then extend only if residual moisture permits. Cash is scarce between harvests, so input costs are rationed. Irrigation is limited. Where communal ponds are silted or canal supply is irregular, planting decisions stay conservative and labour shifts to forest work. Where minor irrigation and on-plot storage exist, households add a second cash flow from short vegetables, small millets or poultry.

Animal numbers are large on paper and veterinary points and artificial insemination centres are widespread, yet milk infrastructure is thin and chilling points are few. Goats, pigs and backyard birds are more common than steady dairy sales. Banks see scattered small tickets rather than coherent dairy pipelines. Credit for fodder, sheds and working capital is a recurring gap despite headline schemes.

MGNREGA anchors incomes in the dry months of December to February. Plantation work, pond desilting and water resource management provide regular employment while repairing the ecological base. Public employment is visibly linked to commons improvement. The timing matches the farm calendar and the assets created serve CFR landscapes. In villages where gram sabhas run NTFP operations, MGNREGA and CFR appear together on the notice board. Youth volunteers often serve both spaces. The overlap helps, because the same cohort that organises NTFP grading can mobilise for pond cleaning, contour trenches and nursery work.

Value addition in forest produce is moving from aspiration to cautious practice. Mahua flowers and seed oil, bamboo craft and jamun pulp are a step higher on the value chain. Mahua banks reduce spoilage and prevent distress sales after bumper collection days. Communities ask for simple processing sheds, basic testing, food-grade containers, label support and buyers who honour grade and delivery windows. Cold storage is discussed often, but many villages first need shade drying, sifting, safe packaging and a way to hold stock for a few weeks so aggregation is possible. Cluster planning by agro-ecology is sensible. Bamboo, mahua, tendu and lac run on different calendars and grading rules. Where gram sabhas are federated, and where an FPO or cooperative provides a working capital line and standard contracts, village earnings are higher and more even.

Headwinds are visible. Irregular rainfall and long dry spells reduce NTFP availability and shift collection windows. Wildlife conflict restricts access and raises time costs for women and older collectors. Mining blocks and new roads cut through collection routes and change access terms, sometimes permanently. In a district where most of the geography is forest, these risks are immediate. Households respond by splitting labour across NTFP seasons, casual farm work, migration to Gondia and Chhattisgarh for agricultural labour, and small fisheries where natural water bodies allow. Fisheries remain marginal, but the base exists. The district lists reservoirs and hatcheries, and fishermen societies function in most blocks. With basic gear finance, seed supply and a minimal cold chain, small fisheries can become a shoulder occupation for villages near water when farm work is thin.

Culture is changing in place. Ghotul schools still function in parts of Kurchi, so youth spaces and customary learning continue. Everyday Gondi is declining in mixed markets and schools. The language shift shapes how people negotiate with banks, buyers and officials, and which livelihoods feel modern to teenagers. NGOs and youth groups emphasise practical education tied to village enterprise, tool banks for shared implements and demonstration-led learning. Villages that run goat health camps, mahua quality days and soil and water workshops produce more entrepreneurs than villages that only receive generic training. The older idea of the Bara Balutedar economy, mutual service and exchange across occupations, has traction when paired with current procurement practices, reliable payments and basic compliance. Gramodyog stalls and small, GST-light bazaars inside industrial zones suit a forest district with long distances and thin cash, and can help build local buying and selling habits.

Finance is improving, but texture is uneven. The credited posit ratio is low and formal intermediation is thin in several blocks, a common pattern in remote forest districts. KCC numbers are rising, SHG linkage is significant with women's groups in the majority, and MSME lending is growing even when the count of units financed fluctuates. PM-Kisan coverage is wide. RIDF projects, watershed works and wadi programmes are in place. FPO formation has accelerated in some blocks. There are working examples where producer groups, gram sabhas and SHGs share a plan for produce, finance and logistics. Gaps remain clear. Storage capacity thins away from rice mills, cold chain is scarce, procurement is lumpy, and the poorest sellers face the longest payment delays. Where assaying is trusted, aggregation is real and transport is booked at the time of sale, village capture of value rises. Where any

one of these is missing, sellers discount in advance and treat digital trade as visibility rather than bargaining power.

A low-cost cultivation approach that uses local biomass, places soil health at the centre, and pairs goats and poultry with trained pashusakhis suits the district. Local seed production and science-based planning support ecological resilience and community ownership. Credit performs best when a shed, a water point or a road is ready. Tool banks at village clusters, demonstration farms for progressive households and timely MSP payments build confidence to stay rather than migrate. Family farming models preserve identity. When linked to gram sabha produce ledgers and SHG accounts, they also improve access to affordable finance. None of this depends on a dramatic new scheme. It requires the working pieces to connect in the order that households live them, forest first and farm second, water and storage before yield, gram sabha and SHG before buyer, and predictable cash in lean months before everything else.

8.3 Yavatmal District

Table 89 Yavatmal - Demography, Land, Crops, Climate, Finance, Markets

Theme	Indicator	Yavatmal
Geography & admin	Total area; blocks; revenue villages; GPs	13,582 sq. km; 16 blocks; 2,137 villages; 1,201 GPs.
Agro-ecology	Zone; climate; soils	AZ96 Central Maharashtra Plateau; Semi-arid to dry sub-humid; medium/shallow black soils.
Land use	Total geographical area; forest; fallows etc.	1,352,000 ha total; 265,000 ha forest; other categories per PLP land-use table.
Groundwater	Block status	All 16 blocks classified Safe.
Demography	Population (R/U); SC; ST; literacy	Pop. 2.772 million (Rural 2.174 m; Urban 0.598 m); SC 0.328 m; ST 0.514 m; Literates 2.295 m.
Households	Total; rural; BPL	647k total; 515k rural; 257k BPL.
Village infrastructure	Electrified; banking; primary schools; PHCs; potable water; paved approach roads	Electrified 1,871; banking 614; primary schools 1,736; PHCs (institutions) 66; villages with PHC facility 557; potable water 1,724; paved approach roads 1,911.
Rainfall	Normal; actual	Normal 911 mm; actual ~1,109 mm (recent years).
Crops & intensity	Net sown; GCA; cropping intensity	Net sown 9.02 lakh ha; GCA 10.51 lakh ha; cropping intensity 116.52%.
Irrigation	Area available (NIA+fallow); net irrigated; by canals	344,758 ha available; 41,718 ha net irrigated; 10,367 ha by canals/channels (others in table).
Workforce	Cultivators; agri labour; allied; others	Cultivators 442k (of which 212k small/marginal); agri labour 270k; allied agro 13k; other workers 241k.
Agri support	Fert/seed/pesticide outlets; FPOs; agro-service centres; soil labs; KVKs	1,138 outlets; 115 FPOs; 450 agro-service centres; 5 soil-testing labs; 2 KVKs.
KCC	KCC cards in force	66,976 (2022) → 59,548 (2024).
Allied outputs	Fish; eggs; milk (per-capita)	Fish 3,752 MT; Eggs 280 lakh (~52 per person/yr); Milk 192 g/day.

8.3.1 Rural Economy

Yavatmal is a large, predominantly rural district (2.17 million rural residents) with a tribal share above the national average - shaping both access and programme design. The agro-ecological baseline is semi-arid to dry sub-humid on the Central Maharashtra Plateau with medium and shallow black soils, so water control and input timing govern outcomes. On land and water, 1.35 million ha are reported, including 265,000 ha of forest. Groundwater is a relative strength all 16 blocks are "Safe" but surface water and conveyance limit expansion:344,758 ha as area available for irrigation, yet only ~41,718 ha are net irrigated, and canals/channels cover roughly 10,367 ha. The result is a district that largely runs on a single assured Kharif with modest cropping intensity (116.5%). Rainfall normal (911 mm) look adequate on paper, but actuals oscillate recent years show ~1,109 mm so timing and storage matter as much as totals. Production is firmly Vidarbha-typical: cotton, soybean and tur anchor the crop basket, with cereals and minor pulses filling niches. The 's three-year crop table reinforces this mix, alongside the static cropping intensity underscoring how water, not just area, caps diversification. Allied activities are present but not yet dominant: fish production ~3,752 MT, egg availability ~52 per person/year, and milk at ~192 g/day point to under-exploited animal-source foods relative to population size. Rural services are widespread but thin at the edge. Electrification covers 1,871 villages; banking access reaches 614 villages; primary schools 1,736; and PHC coverage appears as 66 PHCs with 557 villages listing PHC access in the infra table. Potable water is reported in 1,724 villages, and 1,911 villages have paved approach roads. This grid lowers transaction costs, but depth and quality vary by block. The workforce profile is agrarian: ~442k cultivators (about 212k small/marginal), ~270k agri labourers, and a small 13k in allied agro-activities; ~241k are "other workers," capturing the nascent non-farm layer. On the finance rails, input access and enterprise formation are enabled by a dense retail ecosystem (1,138 input outlets; 450 agro-service centres) and an active collective layer (115 FPOs), yet KCC cards in force declined from ~66.9k (2022) to ~59.5k (2024) a soft spot for seasonal liquidity that shows up in field behaviour. In Summary, water reliability is the binding constraint; cotton-soy-tur dominance reflects that constraint; services exist but thin out with distance; and strengthening seasonal finance, on-farm water, and allied value chains is what turns "normal" rainfall and "safe" groundwater into real household income.

8.3.2 Yavatmal - Field notes

Yavatmal's rural economy runs on a seasonal rhythm anchored in a single, rain-fed crop, with households planning the monsoon sowing and cushioning risk through short-cycle work and forest produce when cash is tight. The production base is dominated by cotton, soybean and tur on small, fragmented holdings, and the data profile matches that reality, with cropping intensity around 116.5 percent and net irrigated area only about 41.7 thousand hectares against a much larger cultivable base, so timing and liquidity matter as much as yield. Labour gaps push families to hire tractors and other implements, weedicides substitute for scarce manual weeding, and although the input ecosystem is extensive, with roughly 1,138 retail outlets and 450 agro-service centres, seasonal cash remains thin as KCC cards in force have slipped from about 66.9 thousand to about 59.5 thousand over 2022 to 2024, which explains rationing of inputs between sowing and harvest. Water is the decisive constraint, all blocks are classified safe for groundwater yet dependable irrigation is limited, rainfall normal sit near 911 millimetres with recent years around 1,109 millimetres, so outcomes hinge on when the rain arrives and on the ability to store it locally; where minor irrigation or on-plot storage exists farmers stretch into short vegetables or a second pulse, elsewhere plans stay conservative. Allied activities fill the gaps but remain under-realised, backyard poultry and small ruminants are common while district aggregates still read modest, about 52 eggs per person per year, roughly 192 grams of milk per day, and fish production near 3,752 metric tonnes, and households point to training, housing, fodder and market access as the reasons dairy trails poultry and goats. In the roughly 900 forest-based villages, families

collect mahua, tendu, honey and bamboo in the lean months, tendu marketing is stronger through gram sabhas and federations while most other items move individually with weak grading and limited access to regulated markets, which keeps returns low and underscores the need for basic storage and processing at the base of the chain. Women's groups and collectives are an important layer, SHGs are active and FPO examples such as Maregaon are encouraging and consistent with more than a hundred registered FPOs in the district, but members repeatedly ask for simpler documentation, stronger leadership and governance training, and clearer links to KCC and insurance so that collective action translates into smoother cash flows. Public works and basic services help steady the floor, MGNREGS investments in irrigation wells, fencing and fruit plantations slot into the farm calendar and reinforce commons, and village infrastructure is extensive on paper, with electrification in about 1,871 villages, banking access in about 614, roughly 1,736 primary schools, potable water in about 1,724 and paved approach roads in about 1,911, yet remoter hamlets still face thin service depth and higher travel costs to transact. For youth, the risk and low returns of farming dampen interest, seasonal migration persists, but where FPOs lower input costs and coordinate equipment and insurance participation improves, and the overall picture that emerges from the planning data is straightforward, deepen water storage and small irrigation, strengthen seasonal credit so inputs are timely, and grow allied value chains so households can stabilise income without being forced out of agriculture.

8.4 Beed District

Table 90 Beed - Demography, Land, Crops, Climate, Finance, Markets

Theme	Key indicators
Geography & admin	Area: 10,693 sq km • Sub-divisions: 5 • Blocks: 11 • Revenue villages: 1,031 • Gram panchayats: 1,031 • Lead Bank: SBI.
Agro-ecology & soils	Zone: Central Maharashtra Plateau • Temp: ~1239.6°C • Soils: light/medium to rich black cotton.
Rainfall (mm)	Normal: 699 • Actual: 1,199 (2021-22), 816 (2022-23), 609 (2023-24).
Land use & holdings	Cultivable land: ~9.63 lakh ha • Avg. holding: 1.17 ha • Total operational holdings: 7.58 lakh; small & marginal: 83% (by number).
Irrigation & water	Groundwater status: all 11 Safe • Area available for irrigation: 9.23 lakh ha • Net irrigated area: 2.06 lakh ha • Potential created: 2.50 lakh ha; wells irrigated: ~1.02 lakh ha.
Crops (area/production)	Mixed cereal pulse base with cash crops: soybean, cotton, jowar, chickpea, bajra, tur. Soybean area ~3.67 lakh ha (2023-24); sorghum ~1.95 lakh ha; chickpea ~1.89 lakh ha. GCA: 13.48 lakh ha • Net sown: 8.44 lakh ha • Cropping intensity: 159.7%.
Horticulture/ODOP	ODOP: Custard apple (area ~1,812 ha in 2023-24); citrus/pomegranate presence; sericulture up to 2,600 ha.
Mechanisation	Tractors: 26,905 (2023-24) and rising.
Allied & livestock	Goats: ~4.68 lakh; poultry (indigenous): ~7.74 lakh; milk collection centres: 1,376; dairy co-ops: 442. Milk: ~61 lakh LPD (383 g/day) • Eggs: ~897 lakh (35 per person/yr) • Fish: ~4,134 MT (7 g/day).
Markets, storage & roads	Market yards: 16 • Storage godowns: 64 (capacity ~103,465 '000 MT) • Cold storages: 1 • Pucca roads: 13,534 km • Rail: 48 km.
Financial rails	CD ratio: 81.4% (Mar 2024) • KCC coverage (nos.): 2.22 lakh -> 2.84 lakh -> 2.19 lakh (FY22 -> FY23 -> FY24) • PM-Kisan: 5.18 lakh -> 3.74 lakh (FY22 -> FY24) • Crop insurance (policies): 5.60 lakh -> 10.43 lakh -> 5.58 lakh.
SHGs & MSME	SHGs formed: 18,526 -> 25,652; bank loans: ₹328.2 cr -> ₹1,177.3 cr (FY22 -> FY24) • MSME clusters: 10; Udyog Aadhaar registrations: 22,273; MUDRA loans (FY24): ₹4,840 cr+.
Credit flows & potential	GLC total (FY24): ₹4,27,039 lakh; Agri GLC: ₹2,75,159 lakh (crop loans ₹1,89,425 lakh). Priority-sector credit potential (FY26): ₹7,00,351 lakh; Agriculture: ₹4,45,228 lakh; MSME: ₹1,73,426 lakh.

8.4.1 Rural Economy

Beed is a classic drought-prone, high-cropping-intensity district where households stretch a largely rain-fed base with mechanisation and allied activities. Rainfall volatility is stark 699 mm normal against actuals swinging from 1,199 to 609 mm across three recent years so farm plans privilege timing and protection over expansion. Despite all 11 blocks classed "Safe" on groundwater, usable irrigation lags: area available is 9.23 lakh ha, yet net irrigated is only ~2.06 lakh ha and the potential created is 2.50 lakh ha; the rest depends on monsoon timing and on-plot storage, hence Beed's high cropping intensity (≈160%) is achieved with conservative second-season choices rather than secure water. The cropping basket balances staples and cash: soybean, cotton, jowar, chickpea, bajra, tur. In 2023-24, soybean area was ~3.67 lakh ha, sorghum ~1.95 lakh ha, chickpea ~1.89 lakh ha; productivity moves with rainfall (e.g., sorghum productivity lifted as area expanded). Fertiliser use rose to ~194 kg/ha (total), signalling input-intensive responses to weather risk. Meanwhile mechanisation has surged tractors climbed to 26,905 reflecting labour scarcity and the push to hit short planting windows. Seed replacement is mixed: cotton/bajra at 100%, but soybean/urad/tur still around 35%, leaving yield headroom if water and seed systems improve together. Allied incomes are present and scalable. Livestock numbers are large (goats ~4.68 lakh; poultry ~15.3 lakh combined), and the milk grid lists

1,376 collection centres and 442 co-ops, yet per-capita availability (milk 383 g/day; eggs 35/year; fish 7 g/day) remains modest for a district this size an infrastructure and working-capital story more than a demand gap. Fisheries societies (135) and rising sericulture (2,600 ha) point to diversification corridors that fit Beed's climate, while ODOP: Custard apple (area ~1,812 ha) and citrus pockets add horticulture cash-flows where micro-irrigation exists.

The market logistics spine is functional but thin at the second mile. 16 market yards, 64 godowns (≈1.03 crore MT listed capacity) and a road grid of 13,534 km are positives, but cold-chain capacity is just one unit; quality testing, aggregation, and transport at trade time still mediate what farm-gates capture. On finance, Beed's banking outreach is wide and CD ratio at 81.4% is healthy; KCC, PM-Kisan and crop insurance touch large numbers (with policy counts spiking in 2022-23 and normalising in 2023-24), while SHG credit more than tripled over two years and MSME flows rose, alongside MUDRA disbursements. The credit potential stack for 2025-26 weights farm credit (₹₹4.03 lakh cr), agri-infra (warehousing/land development) and food & agro-processing, signalling a pivot from survival liquidity to asset-backed resilience

8.4.2 Beed Field notes:

Conversations with Janvikas Samajik Sanstha and ANIK Financial Services emphasised a large base of landless and marginal households using micro-loans to enter self-employment and trade. The Kaij taluka split hills vs. Manjra basin plays out in livelihoods: water stress and rain timing dominate choices in the hills; in the basin, proximity to schemes and command areas helps, but urban draw on dam water is felt locally. ANIK's ₹₹50-crore portfolio with ~99% recovery and lending to Denotified Tribes/Dalit groups maps onto Beed's broad financial rails 81.4% CD ratio, fast-rising SHG credit (₹₹1,177 cr in FY24) and shows how last-mile lenders sit atop the district's formal architecture (KCC/PM-Kisan/insurance) to smooth cash cycles, especially for those with grazing-patta origins or fragmented plots.

Yuva Gram Vikas Mandal flagged the scale of migrant sugarcane cutters and a gradual shift toward goatery, poultry and livestock-linked incomes. That shift aligns with district aggregates: goats ~4.68 lakh, poultry ~15.3 lakh, 1,376 milk collection centres a sizeable base that still under-delivers per-capita protein because of training, housing, fodder and market gaps. The noted farm mechanisation dependence and herbicide use track with PLP trends 26,905 tractors, rising total fertiliser use while concerns on soil and habitat quality reinforce why Beed's watershed projects (19; ~21,000 ha treated) and RIDF road/bridge investments remain central to farm viability.

Manavlok described a visible post-COVID "near-work" pattern families residing in villages and commuting to taluka/district hubs plus reverse migration at the margin. Reported child marriage persistence, social-media anxieties, and the troubling practice among some sugarcane-cutting families of opting for extreme health decisions to avoid work interruptions point to the social costs of seasonal migration and income volatility. With rainfall swings (699 mm normal vs. 6091,199 mm actual) and low assured irrigation (net irrigated ~2.06 lakh ha of a much larger cultivable base), households rationally chase predictable cash: short-cycle livestock, petty trade, repair services going door-to-door (a post-COVID service pattern noted across villages), and micro-enterprises trends that sit well with Beed's 10 MSME clusters, 22,273 Udyog registrations and strong MUDRA flows.

Field teams also heard that soybean's attraction has cooled with price pressure and weather risk, pushing some farmers back toward sugarcane where water is reachable, and toward low-risk earners like barber/cloth shops, Krushi Seva Kendra, dairy vending, lens shops or mobile/electrical repairs. The PLP's crop table shows soybean volume volatility; meanwhile sericulture expanded to 2,600 ha and ODOP: custard apple scaled modestly evidence that diversification appears where water and buyer pathways exist. Higher-education enrolments are up, but a mismatch with jobs fuels frustration; Beed's PLP leans into skill/enterprise corridors food & agro-processing (₹₹28,930 lakh potential),

animal-husbandry lines (dairy/poultry/goat), and agri-infra (storage/land development) precisely the spaces that convert education into enterprise if credit and compliance are simplified.

On collectives, the Maregaon-like FPO story elsewhere resonates in Beed's numbers: 417 registered FPOs, dense input ecosystems (6,687 outlets/agro-service centres per PLP listing), and rising KCC-through-GLC in past years. But compliance load and documentation complexity still deter the newest members; your interlocutors asked for simpler multilingual paperwork, cooperative-equivalent support and patient capital in early years requests coherent with the district's credit-potential tilt toward AIF/AHIDF-type assets and working capital for aggregation, storage and processing.

Finally, the cost-of-living squeeze (₹2025k/month for a family), labour scarcity, and import-price effects on pulses were recurring complaints. The quantitative context helps decode this: households juggle a rain-timed kharif, thin rabi options, modest allied cashflows, and uneven access to markets/logistics (one cold store; second-mile gaps). That is why Beed's PLP channelises 2025-26 credit toward water resources (₹19,641 lakh), farm mechanisation (₹7,594 lakh), plantation/horticulture (₹5,538 lakh), dairy (₹14,320 lakh), poultry (₹4,224 lakh), sheep/goat/piggery (₹7,070 lakh), fisheries (₹1,265 lakh) and agro-processing (₹28,931 lakh) a portfolio designed to steady cash cycles, thicken non-farm income and lift farm-gate shares by fixing storage, grading and first-mile transport.

8.5 Solapur District

Table 91 Solapur - Demography, Land, Crops, Climate, Finance, Markets

Theme	Key indicators
Geography & admin	Area 14,895 sq km • 11 blocks • 1,143 revenue villages • 1,022 GPs • Lead bank: Bank of India.
Demography	Population 43.18 lakh (Rural 29.19; Urban 13.99) • SC 6.50 lakh • ST 0.78 lakh • Literates 33.26 lakh • HHs 8.73 lakh (Rural 5.94; BPL 2.25).
Agro-ecology & soils	Semi-arid; zones: Western Plateau & Hills, Western Maharashtra Plain, Scarcity • Soils: black, coarse grey, reddish.
Rainfall	Normal ~481 mm; actual: 652 ('21-22), 716 ('22-23), 451 ('23-24).
Land use	TGA 14.88 lakh ha • Forest 0.37 lakh ha • Current fallow 1.59 • Other fallow 1.08.
Groundwater	Blocks: 3 Safe (Akkalkot, Solapur North, South Solapur); 7 Semi-critical; 1 Over-exploited (Malshiras).
Irrigation & water	Area available (NIA+fallow) 5.61 lakh ha • Net irrigated 2.94 lakh ha • Potential created 5.35 lakh ha • By canals 1.23 lakh ha; by wells 0.96 lakh ha.
Crops & intensity	Kharif: soybean, arhar, urad, maize • Rabi: jowar, wheat, maize, gram • GCA 11.0312.62 lakh ha; net sown 8.59.48; cropping intensity 130140% (down to 129.8% in 202324).
Production snapshots	Sorghum area 2.68 lakh ha ('23-24) • Soybean 1.33 lakh ha • Maize 1.10 lakh ha; yields vary sharply with rain.
Inputs & services	Fertiliser use ~391 kg/ha (total, '23-24) • Input outlets 8,780 • Soil testing centres 22 • 2 KVKs • Agri pumpsets 3.81 lakh.
Markets & storage	32 market yards • 6 e-NAM/RMC sites • Cold storages 39 (cap 64,547 '000 MT) • Godowns 187 (cap 1.61 '000 MT) • Roads 21,022 km • Rail 375 km.
Finance rails	CD ratio 89.2% (Mar'24) • KCC in force 1.71 □ 1.56 lakh ('22□'24); KCC-GLC rising • Crop-insurance policies 2.90 □ 10.68 lakh ('22□'24) • Priority-sector credit potential FY26 ₹15,550+ cr (Agri ₹₹9,762 cr, MSME ₹₹4,355 cr).
Allied base	Livestock ('19 census): goat 9.62 lakh; buffalo 4.96 lakh; indigenous poultry 21.20 lakh; Deccani sheep, Osmanabadi goat • Dairy co-ops 951; milk collection centres 3,503 • Fisheries infra: 79 tanks, 4 reservoirs, 1 hatchery; Fishermen societies 138 • Annual milk 14.75 lakh MT, eggs 4,643 lakh.

8.5.1 Rural Economy

Solapur's rural economy is semi-arid and variability-driven: with a normal rainfall of ~481 mm but actuals oscillating between 451716 mm in recent years, households hedge production risk through cropping mix, hired mechanisation, and allied cashflows. Irrigation potential is large on paper (potential created ~5.35 lakh ha), yet net irrigated area ~2.94 lakh ha and block hydro-status skew to semi-critical/over-exploited in the sugarcane belts (e.g., Malshiras), so the binding constraint is reliability, not capacity. The geography splits: assured pockets stretch into higher-value perennials and a rabi, while uplands and scarcity tracts prioritise a single kharif and moisture-savvy rabi (sorghum, gram). Cropping intensity has drifted down to ~130%, a signal of protection after the 202324 short monsoon.

The crop basket remains Vidarbha-Deccan hybrid: soybean, arhar/urad, maize in kharif; jowar, wheat, gram in rabi. Area shifts mirror rainfall and price: sorghum rebounded to 2.68 lakh ha ('23-24) as a risk hedge; soybean expanded to 1.33 lakh ha but yields slid with the dry finish; maize remains productivity-led but sensitive to moisture ('23-24 yield correction). Fertiliser use sits near ~391 kg/ha (total), reflecting input-intense responses to water risk. The second mile is workable 32 market yards, 6 e-NAM sites, 39 cold stores, 187 godowns yet quality testing, aggregation, and booking transport at trade time still determine the farm-gate share. KCC accounts declined from 1.71 lakh to 1.56 lakh ('22 -> '24) even as KCC-GLC rose, indicating fewer cards, larger limits; crop-insurance surged to over 10.6 lakh policies in 2023-24, showing risk transfer is integral to livelihood planning. Allied activities are broad and scalable: a large small-ruminant base (goat ~9.6 lakh; Deccani sheep) and substantial poultry underpin short cash cycles; the dairy grid (951 co-ops; 3,503 collection points) anchors daily liquidity though chilling/processing depth varies by block; inland fisheries (tanks 79; reservoirs 4) add shoulder incomes where water bodies persist. On the enterprise side, MSME flows and food/agro-processing credit have been rising; the FY26 credit stack puts weight on farm credit (crop + TL), agri-infra (storage, land development) and ancillary processing, mapping cleanly to what lifts incomes in a scarcity district: water control, working capital discipline, and value-addition near farm-gate.

8.5.2 Solapur Field notes

Digital Sakhi & Seva Kendra (Ghoti). Nine Seva Kendras in the taluka now act as women-run last-mile service points for crop-insurance enrolment, scheme applications and payments. A typical centre earns ~₹10,000/month, and the operator often doubles as an SHG CRP, converting digital rails into steady female incomes. The model is constrained by power outages, which interrupt transactions. The presence of 8,780 input outlets, 22 soil labs and 2 KVKs in the district provides a wider ecosystem these kendras plug into, especially for insurance uptake (policies >10.6 lakh in '2324) and KCC-GLC access.

Poultry enterprise (return migrants). A couple who left Pune during COVID set up a 6,000-bird broiler unit with a private integrator: company supplies feed and meds; the entrepreneur manages sheds, water, labour (₹600/day x 4), and carries insurance. With ~5 cycles/year (45-day) and manure sales (₹140/bag, 3040 kg), phase-1 success unlocked bank funding for phase-2. This fits Solapur's large poultry base (indigenous ~21.2 lakh; improved ~9.8 lakh) and agro-processing credit surge, and shows why working capital + risk cover are decisive.

Astitva Samajik Vikas & Sanshodhan Sanstha (scarcity tracts). Every third year drought is the lived memory in Akkalkot-Sangola-Mangalvedha-Karmala belts; much of this arc is semi-critical on ground-water, with Malshiras over-exploited. The group supports land rights regularisation for historically awarded parcels (watan lands), then pushes dryland horticulture (pomegranate, mango, ber) on revived plots. Given Solapur's banana/grape/pomegranate clusters and horticulture's export/process potential, this pathway is rational but requires micro-irrigation, storage, and buyer linkages, which the

district's 39 cold stores and 32 yards can partly serve. Goat Banks and girls' Cycle Banks respond to mobility and cashflow gaps in small/marginal households (71% holders; 35% area).

Labour, mechanisation, and input behaviour. Harvesters and hired tractors substitute scarce labour; herbicide use is rising consistent with the district's high fertiliser intensity raising concerns on soil and habitat quality, especially where rabi depends on residual moisture. With cropping intensity easing to ~130% after a 451 mm year ('23-24), families protect the first crop and only extend when on-plot storage or minor irrigation exists.

Youth, migration, and skills: Karmala's uplands face chronic migration (>60%), altitude-driven lift constraints, and drinking-water stress; wage gaps (men ₹600, women ₹300) persist. Yet SHG/NRLM credit shows strong discipline (reported ~1% NPA locally), with loans moving into tractors, small machinery, and food-processing gear in line with the district's MSME momentum. Shift from sugar-cane to banana is visible in hubs like Jeur-Kandar-Tembhurni; rough economics cited locally (₹1 lakh/acre in cane vs ₹3 lakh/acre in banana) match the PLP's horticulture thrust but hinge on pack-house practices, grading and contracts.

Block crop patterns, processing, and research linkages. Barshi leans jowar/soybean, Sangola to maize/pomegranate; MSRLM pushes goatry, poultry, and allied non-farm. NRCP (pomegranate) reports hybrids, arils and dehydration tech with pilots for mid-day-meal nutrition; the clear message from both NRCP and KVK Mohol is SOP-driven adoption: farmer-to-farmer demonstrations outperform generic trainings. KVK's twice-weekly weather advisory and the explosion of pulse mills (from <5 to >40 in five years) illustrate how information + processing can rewire value realisation at district scale.

Social textures and costs. In sugarcane-cutting households, hard choices (e.g., women's health procedures to avoid work breaks) reflect volatile cashflows and seasonal migration. Child marriage concerns, mobile-driven anxieties, and cost-of-living squeeze surface alongside a visible spread of door-to-door repair services (post-COVID micro-entrepreneurship) and better housing signals of income diversification without full exit from farming. The way through, as the district credit plan also implies, is to sequence: (1) water reliability (drip in cane; minor irrigation in uplands), (2) seasonal credit discipline (KCC + insurance + timely payouts), (3) first-mile value-add (grading / packaging / primary processing), and (4) collective channels (FPOs/SHGs) into storage and logistics already present in Solapur.

8.6 Satara District

Table 92 Satara - Demography, Land, Crops, Climate, Finance, Markets

Theme	Key indicators
Geography & admin	Area: 10,480 sq km • Sub-divisions: 4 • Blocks: 11 • Revenue villages: 1,719 • Gram panchayats: 1,508 • Lead bank: Bank of Maharashtra.
Demography & workforce	Population 30.04 lakh (Rural 24.33; Urban 5.71); Literates 22.26 lakh • Workers ('000): Cultivators 630, Agri labour 243, Allied agro 388, Other 356.
Agro-ecology & soils	Zones: Western Plateau & Hills (PAZ9); Western Maharashtra Plain (AZ94) • Climate: Tropical wet & dry • Soils: Medium/deep black; shallow red.
Rainfall (mm)	Normal: ~980 (district avg) • Actual: 1,120 ('21-22), 631 ('22-23), 722 ('23-24).
Groundwater status	Safe: 6 blocks (e.g., Karad, Mahabaleshwar) • Semi-critical: 5 (Man, Khatav, Patan, Phaltan, Wai) • Over-exploited: 0.
Land & irrigation	NIA+fallow available: 5.58 lakh ha • Irrigation potential created: 4.68 lakh ha • Net irrigated: 2.29 lakh ha • Canals 1.14 lakh ha, wells 0.35 lakh ha.
Cropping & intensity	GCA: ~8.10 lakh ha • Net sown: ~6.01 lakh ha • Cropping intensity: 134% ('23-24).
Major crops ('2324)	Rice: 4.73 lakh ha @ 2,389 kg/ha • Pearl millet: 6.07 lakh ha @ 914 kg/ha • Maize: 2.21 lakh ha @ 2,710 kg/ha • Soybean: 8.72 lakh ha @ 2,525 kg/ha • Wheat: 3.74 lakh ha @ 2,401 kg/ha • Chickpea: 3.41 lakh ha @ 1,070 kg/ha.
Allied & per-capita availability	Milk: ~775 g/day • Eggs: ~169/yr • Fish: ~3 g/day • Inland facilities: 78 tanks, 5 reservoirs, 1 hatchery.
Markets & storage	Cold storages: 5 (cap 1,500 '000 MT) • Godowns: 412 (cap 120,200 '000 MT) • Market yards: 34 • Haats/RMCs: 67.
Finance rails	CD ratio: 70.8% (Mar '24) • Crop-loan GLC: ₹2,75,046 lakh -> ₹3,13,000 lakh -> ₹3,22,160 lakh ('22->23->'24) • Crop-insurance coverage: 2.14 lakh -> 2.47 lakh policies.
Priority-sector potential FY26	Total: ₹1,30,498 cr • Agriculture: ₹78,363 cr (farm credit ₹59,399 cr; agri-infra ₹4,011 cr; ancillary ₹14,953 cr) • MSME: ₹24,629 cr.

8.6.1 Rural Economy

Satara's rural economy is split by geography and water: a wet western escarpment (Koyna Mahabaleshwar Jawali) and a rain-shadow east (Man/Khatav/Phaltan/Wai). District rainfall averages ~980 mm, but recent swings (1,120 → 631 → 722 mm) and the semi-critical groundwater status in five eastern blocks mean reliability, not capacity, is the binding constraint. Irrigation potential created (4.68 lakh ha) still converts to only ~2.29 lakh ha net irrigated; canals dominate the irrigated footprint, with wells adding a smaller slice so assured rabi clusters sit along command/minor-irrigation pockets while uplands hedge with moisture-savvy crops. Cropping intensity holds around 134%, reflecting a cautious second season.

The crop map mirrors this hydrology. In the west, rice anchors kharif (4.7 lakh ha in '23-24 with a productivity upswing to ~2.39 t/ha), and dairying is strong. In the east, bajra and jowar define the risk-management play, with maize showing the biggest productivity lift (~2.71 t/ha in '23-24) where timing and input use align. Soybean remains the largest oilseed with ~2.53 t/ha productivity in '23-24, and wheat/chickpea split the rabi cereals/pulses slot. The ODOP crop is strawberry (area rising to ~190 ha), while expanding pomegranate/custard apple belts signal horticulture's pull where micro-irrigation exists. Input intensity has risen steadily (fertiliser consumption trending up across both seasons), consistent with farmers compressing operations into shorter, more reliable windows.

Allied activities thicken cash flows rather than replace crops. Per-capita milk availability ~775 g/day and eggs ~169/year indicate a robust dairy, poultry base, although fish remains marginal (~3 g/day),

tied to water bodies (78 tanks, 5 reservoirs) and local societies. The market spine 34 market yards, 67 haats, 5 cold stores, 412 godowns lowers spread volatility, but the second mile (grading, aggregation, transport at trade time) still decides farm-gate realisations. Financial rails are deepening: crop-loan GLC rose across three years, crop-insurance coverage expanded, and the CD ratio climbed to ~71%, while the FY26 credit stack weights farm credit, agri-infra (storage/land development) and food/agro-processing, which is exactly the mix that stabilises incomes in a variability-prone district.

8.6.2 Satara Field notes -

Community institutions & cooperatives (Shramjivi Sanstha). The cooperative layer among Katkari fisherfolk, forest workers, and producers of bamboo, ragi (Nachni), Varai, Karvanda, Jambhul, papad has grown into functioning savings/credit societies and SHGs, translating into self-employment and steadier cash. This aligns with district patterns where agro-processing and ancillary activities are explicit thrusts, and where market yards + cold storage create headroom for clustered value-addition if grading/packaging are standardised.

Crops, water, and spatial contrasts. Patan-Jawali-Wai-Koyna-Mahabaleshwar receive very high rainfall (3,0004,000 mm locally), yet non-kharif water control is the choke point; households report single-crop rice dominating the year, with limited diversification beyond the monsoon. In Man/Khatav/Phaltan, dryland horticulture (pomegranate, custard apple) is surging where drip exists, while bajra/jowar remain staples. The block hydro-status corroborates this split (five semi-critical blocks, no over-exploited), and the district's net irrigated area (~2.29 lakh ha) against a much larger sown base explains the conservative rabi choices.

Wildlife conflict & land use pressures. In hill and plain villages, gaur (bison), wild boar, monkeys, peacocks damage rice and other crops; farmers point to protected-area rules and departmental caution that complicate mitigation. The district's forest agriculture edge and rising soil water conservation gaps (area requiring treatment has grown) show why watershed/spring shed programmes feature in the district thrusts and why assets must be placed where conflict is highest.

Livelihoods & migration. SHGs are multiplying; awareness, leadership, and resource control are repeatedly named as livelihood essentials. In Ambeghar (Patan) a landslide-affected village families lean on livestock and off-farm skills (e.g., sewing) but face thin local demand due to migration; customers concentrate in larger towns, forcing commute-based enterprise. This “near-work” pattern echoes elsewhere and fits a district with good roads/markets, yet uneven on-farm water.

Prices, education, and youth. Farmers complain of trader power, salinity from sugarcane mono-cropping, and credit frictions for small/marginal holders; educators and practitioners also highlight weak work incentives among youth, exam-prep without skills, and a slow transition from the old “money-order economy.” District data show rising MSME flows and processing capacity, but the skills/enterprise bridge still needs practical, SOP-led adoption and lighter compliance for first-time entrepreneurs.

Women-centred finance & services (Mann Deshi). Group-lending without collateral (typical ticket ₹6070k now; graduated to ₹25 lakh for proven groups) and doorstep KYC/service sustain ~99% recovery. The model layers in UPI/NEFT, death insurance, mentoring, and market linkage. Around this are 40 Pashu Sakhis, soil and livestock pathology labs (reports at affordable prices, faster diagnostics), sewing/skills centres, sports nutrition programmes, a community radio (4050 km reach), and cold storage for producer collectives. Together, these convert women's collectives into investment-ready units and improve animal productivity a good fit with the district's high milk/egg availability and agri-processing potential.

Practitioner perspectives (AFARM, KVK, experts). Input costs (seed/fertiliser/pesticide) often exceed 50% of crop spend; efforts focus on cost reduction + productivity via dryland conservation, plot-level

horticulture kits (½1 acre), and training. Farmers in Dahivadi/Mhaswad continue to migrate seasonally; education/health access is relatively better, but co-op misgovernance is a drag. KVKs report farmer-to-farmer diffusion beats generic trainings; twice-weekly weather advisories and a pulse-mill boom (from <5 to >40 in five years) show how information + processing can rewire value capture. Experts argue for a pivot from high-yield to high-value cropping, backed by livestock/poultry/goatry, and for research/credit to prioritise resource-poor farmers which the district's FY26 plan does, via water resources, plantation/horticulture, dairy/poultry/SGP, and food & agro-processing lines.

What unlocks the next step. The sequence that matters in Satara is: (1) water reliability (drip in cane areas; minor irrigation/springshed in uplands), (2) seasonal finance discipline (timely crop credit + insurance + payouts), (3) first-mile value-add (grading/packaging/primary processing tied to haats and yards), and (4) collective channels (SHGs/FPOs/co-ops) into the existing storage/cold chain. Add wildlife-smart land and crop plans in the west, and horticulture + small dairy/goatry in the east, and the district's livelihoods thicken without forcing a farm exit.

8.7 Nandurbar District

Table 93 Nandurbar - Demography, Land, Crops, Climate, Finance, Markets

Theme	Key indicators
Geography & admin	Area: 5,955 sq km • Blocks: 6 • Revenue villages: 930 • Gram panchayats: 639 • Lead bank: SBI • Classified Aspirational; very high ST share (≈69%).
Demography & households	Population 16.48 lakh (Rural 13.73; Urban 2.75) • ST 11.42 lakh; SC 0.48 lakh • Literates 9.06 lakh • Households 3.23 lakh (Rural 2.73; BPL 1.84).
Agro-ecology	Climate hot & dry; soils light/medium/black • Normal rainfall ~908 mm; recent actual ~1,120 mm.
Land & use	Forest land 2.34 lakh ha; net sown 2.95 lakh ha; GCA 3.56 lakh ha; cropping intensity ~120.7%.
Water & irrigation	All 6 blocks "Safe" for groundwater • Net irrigated ~1.34 lakh ha (canals 57,649 ha; wells 76,080 ha); irrigation potential created ~1.39 lakh ha.
Crops (area/productivity)	Cotton ~1.23 lakh ha @ ~2.95 t/ha • Maize ~34.5k ha @ ~2.76 t/ha • Sorghum ~26k ha @ ~1.50 t/ha • Sesame ~29k ha • Tur ~11.8k ha • Sugarcane ~24.5k ha • ODOP: Chilli; banana/papaya clusters.
Inputs & services	Input outlets 411 • Agro-service centres 324 • Registered FPOs 328 • Soil-testing labs 3 • Pumpsets 4,771 • KVK 1.
Markets & storage	Market yards/mandis 6 • Cold storages 5 • Storage godowns 74 • Roads 7,423 km • Rail 90 km.
Finance rails	CD ratio 69.4% (FY24) • PMJDY 7.26 lakh • KCC coverage ₹41,468; KCC GLC ₹66,422 lakh (FY24) • Crop-insurance policies ~9,226 (FY24) • SHGs credit-linked 4,200; bank loan ₹10,622.68 lakh (FY24).
Allied base	Livestock ('23-24): Goats 3.23 lakh; indigenous cattle 2.87 lakh; buffaloes 73,966 • Vet hospitals 99; AI centres 104 • Dairy co-ops 34 • Inland fisheries infra: 51 tanks/12 reservoirs • Per-capita availability: milk ~171 g/day, eggs ~233/yr; fish output ~232 MT.

8.7.1 Rural Economy

Nandurbar is tribal-majority and rural by design: ~83% of people live in villages and about 65% of district GDDP is agriculture-linked. The terrain is Satpura hill plain, with hot, dry agro-climate and light/medium/black soils; rainfall averages ~908 mm but inter-annual swings (recent ~1,120 mm) push households to hedge with single assured crop + casual labour/migration. All groundwater blocks are "Safe," yet irrigation reach is selective: ~1.34 lakh ha net irrigated within a much larger cultivated

base. That pattern, plus a cropping intensity near 121%, signals a one-good-season strategy with a modest second season where canals, wells, or lift points are reliable.

The crop map is cotton/maize/sorghum anchored, with sesame and tur as staples and sugarcane in pockets; ODOP chilli and banana/papaya clusters add horticulture nodes. Recent figures show cotton near 1.23 lakh ha (@ ~2.95 t/ha), maize ~34.5k ha (@ ~2.76 t/ha), sorghum ~26k ha (@ ~1.5 t/ha), and sesame ~29k ha a mix that balances cash (cotton, sesame, chilli) with risk management (millets/pulses). Input and service rails exist 411 input outlets, 324 agro-service centres, 3 soil labs, 1 KVK, and as many as 328 registered FPOs but market access is thin relative to the geography (6 mandis for 930 villages), so grading, aggregation, and transport at sale time still decide the farm-gate share.

Household liquidity is tight but formal rails are widening. The CD ratio rose to ~69%, PMJDY coverage is large, KCC volumes are material (GLC ₹664.22 cr), and SHG credit-linkage expanded (loans ₹₹10,622.68 lakh in FY24). Yet crop-insurance uptake (~9.2k policies) and branch density remain constraints (population per branch is high), leaving seasonal migration as a stabiliser for many. Allied activities are under-tapped in value terms despite a large goat base (3.23 lakh) and wide indigenous cattle/poultry footprint; per-capita milk (171 g/day) and fish output remain low, pointing to scope for fodder, health, AI services, and small fisheries around existing 51 tanks/12 reservoirs. On natural resources, forest area ~2.34 lakh ha coexists with soil-water treatment gaps (~4.24 lakh ha still untreated), making watershed/WADI approaches central to raising the floor of rural incomes.

8.7.2 Nandurbar Field notes

Landscape & settlement. A hill plain district straddling the Satpuras, Nandurbar's tribal hamlets sit deep in the interior while non-tribal settlements line the Tapi and the plains. Shahada/Navapur closer to river systems show better irrigation reach and outcomes than erosion-prone uplands where rain runs off quickly and soils tire. The administrative map (only 930 villages, yet 886 with paved approach roads and 943 electrified) explains why even small increments in last-mile infrastructure change transaction costs meaningfully.

Livelihood base & migration. Farming and agricultural labour are the defaults, but single-season cropping and patchy irrigation push families into structured seasonal migration to Surat/Gujarat for semi-skilled work and to western Maharashtra for farm labour typically 46 months a year. With only 6 mandis, marketing remains travel-heavy; bank access is improving (PMJDY, SHGs), yet branch coverage is thin, and documentation gaps (7/12 division, Aadhaar/PAN) keep many outside subsidy/credit nets. Where local opportunities emerge tailoring for women, small livestock, tool-based repair services uptake is visible, especially through women's SHGs (all-women blocks; 4,200 credit-linked in FY24) and gram sangh federations.

Crops, inputs, and risk. Cotton dominates cash plans; maize/sorghum/sesame/tur balance food and fodder. Banana/papaya clusters exist; chilli is the ODOP with scope for drying/grading. Farmers ration inputs to rainfall: canal/well pockets stretch into a second cycle; elsewhere households protect one assured season. Input markets (411 outlets; 324 service centres) function, but soil testing is still thin (3 labs) and insurance penetration is modest (~9.2k policies), so price/monsoon shocks show up immediately in cash flows.

Forests, NTFP & commons. Forest cover is sizeable (~2.34 lakh ha), but NTFP availability is constrained and distances long. Watershed/WADI style investments have traction (multiple projects; soil-water gaps ~4.24 lakh ha), yet require steady handholding and market linkage to convert fruit/millet clusters into income. Custard apple and jambhul have visible potential if collection windows, grading, and cold rooms can be aligned with mandi schedules.

Allied activities & women's enterprise. Goat and backyard poultry are widespread (goats 3.23 lakh), but milk availability (171 g/day) and fish output (~232 MT) confirm under-realisation. Veterinary reach (99 hospitals; 104 AI centres) and KVK services can lift survival and offtake; SHG finance (avg loan ~₹2.5 lakh per group in FY24; total ₹10,622.68 lakh) is already crowding in micro-enterprise among women. BAIF-style tailoring lines show promise when orders and after-sales are organised through gram sanghs.

Health, education & risk. Anaemia, malnutrition, stunting and snakebite risks near Narmada backwaters feature in village accounts; service grids exist (PHCs 61, sub-centres 290, anganwadis 2,455), but distance, language, and migration fragment uptake. Schools report dropouts linked to migration and bilingual pedagogy to bridge Bhil/Kokna/Mawchi/Pawra languages with Marathi; community radio at the KVK is a useful vector for advisories and outreach.

Culture & identity. Traditional worship anchored in Dongriah Dev, Waghdev, Nagdev, Kansara Mata continues alongside assimilation pressures. The cash economy + migration reorders social time festivals compress into return windows; youth exposure shifts skill aspirations, sometimes away from agriculture without a clear non-farm ladder. SHGs/FPOs and PESA-anchored gram sabhas are the institutions most residents encounter weekly; making them service-rich (documentation, entitlements, insurance, input booking, produce ledgers) will matter more than adding new schemes.

Spotlight village-pond fisheries (Navapur). A young Bhil entrepreneur in Bhavare (Navapur) has built a Pangasius enterprise on the village pond, scaling with nets/equipment from the Fisheries Department and PMMSY support. Operating in a PESA village, he reportedly uses ~1% of pond area (paying ~₹25,000/yr to the gram sabha), employs 8-10 villagers, and has grown trade turnover to ~₹1 crore/yr a proof-point that micro-leases + gear + working capital + cold logistics can turn inland water bodies into shoulder incomes in a district with 51 tanks/12 reservoirs.

What moves the needle next. In Nandurbar's conditions the sequence is clear: (1) water & soil first (treat the ~4.24 lakh ha gap; store water on-plot; lift/rehab minor irrigation), (2) seasonal finance discipline (KCC on time; insurance at scale; fix documentation), (3) first-mile value-add (drying/grading for chilli, custard apple, jambhul; goat health & AI camps; mini-cold rooms near mandis), (4) collective channels (FPO/SHG/gram sabha) that lock in aggregation + transport at trade time, and (5) skill rails (KVK + community radio + bilingual extension) so youth can step into agri-allied and local MSME. Done together, these reduce the need for distress migration without asking households to abandon agriculture.

8.8 Sindhudurg District

Table 94 Sindhudurg - Demography, Land, Crops, Climate, Finance, Markets

Theme	Key indicators
Administrative & geography	8 blocks, 431 Gram Panchayats, 748 revenue villages; 5,207 sq. km (≈5.04 lakh ha). Coastal hilly Konkan terrain.
Demography & workers	Population ≈8.50 lakh (≈7.43 lakh rural); cultivators ≈1.25 lakh; agri labour ≈0.79 lakh; "other workers" ≈1.01 lakh.
Land & holdings	Total holders ≈3.26 lakh over ≈3.03 lakh ha; ~87% hold ≤2 ha (≈35% of land). Forest ≈56,000 ha; pastures ≈40,500 ha; cultivable wasteland ≈66,500 ha.
Climate & soils	Per-/humid; normal rainfall ≈2,976 mm (actual ~3,023 mm in 2023-24). Lateritic sandy loam & coastal alluvial soils. Climate vulnerability to agriculture: Very High.
Irrigation & cropping	Net irrigated area ≈28.9k ha (all 8 blocks "Safe" on groundwater); net sown ≈2.06 lakh ha; cropping intensity ~104%.
Crops & productivity	Rice ≈61.7k ha; ≈169.8k MT (≈2,752 kg/ha). Millets ≈1.5k ha; groundnut ≈2.7k ha; maize small but improving yields; cashew, mango, coconut, kokum are key plantation crops (ODOP: Cashew).
Allied sectors	Poultry ~5.41 lakh birds; goats ~30.9k; buffalo ~51.3k. Fisheries production ≈22,637 MT; 27 fishermen societies. 131 dairy co-ops; 2 milk collection centres.
Processing & markets	~315 fruit processing units; ~57 cashew processing units.
Finance & risk cover	KCC accounts ≈1.01 lakh (2023-24); crop insurance ≈42,190 farmers covered; payouts ≈₹83.2 crore (2023-24).
Inclusion & SHGs	4,777 SHGs credit-linked in 2023-24; bank loans ≈₹194.6 crore to SHGs; JLG linkage rising.
Banking & credit	CD ratio ≈51%; priority-sector ACP rising; investment credit in agri exceeded target in 2023-24.
Infra & services	Villages electrified 748; primary schools 737; PHCs 38; sub-centres 249; hospital beds ~1,018. Custom hiring/agro-service centres ~79; approved nurseries ~179.

8.8.1 Rural Economy

Sindhudurg's rural economy is a high-rainfall, smallholder, horticulture-and-paddy system with fisheries as a strong coastal adjunct. Most farmers operate ≤2 ha holdings on lateritic/coastal alluvial soils. The monsoon is generous (nearly 3,000 mm normal), but the terrain and soils mean runoff is quick and retention is modest, so the net irrigated area (~28.9k ha) stays limited relative to the net sown base (~2.06 lakh ha) and cropping intensity (~104%) has softened as perennials expand or land rests between seasons. All eight blocks are "Safe" for groundwater, yet the real constraint is surface control and local storage, not aquifer depletion.

On the crop side, lowland rice remains the food staple (~61.7k ha, ~2.75 t/ha), while cashew, mango, coconut and kokum the cash side; the district is officially ODOP: Cashew, and processing already shows up in the enterprise base (≈57 cashew and ≈315 fruit units). Oilseeds (e.g., groundnut) and millets have small footprints, and maize though limited in area shows yield gains where inputs and water line up. The district's climate vulnerability to agriculture is "Very High", so micro-irrigation, drainage, and orchard management matter more than headline rainfall.

Allied activities are present but under-scaled in value terms: poultry numbers are substantial (~5.41 lakh birds), goats (~30.9k) and buffalo (~51.3k) provide cushion income, but dairy infrastructure is thin (131 societies yet just 2 milk collection centres), keeping realized prices and volumes below potential. Fisheries (≈22.6k MT) and 27 fishermen societies add coastal incomes and have room to move up with seed, gear, cold-chain and structured market ties.

On finance and risk, KCC coverage (~1.01 lakh) and crop insurance (≈42k policies; pay-outs ~₹83 cr in 2023-24) indicate widening safety nets; SHG credit is now material (₹194.6 cr in 2023-24; 4,777 SHGs credit-linked), with JLGs picking up pace important for women-led micro-enterprises and for smoothing seasonal cash gaps between orchard and paddy cycles. The CD ratio (~51%) and repeated over-achievement of investment credit in agriculture point to appetite for term assets storage, small mechanization (custom hiring), orchard inputs, and fisheries infrastructure especially when bundled with extension.

The to-do that emerges from the district numbers is consistent: post-harvest and market infrastructure (grading, packing, pack-houses, ripening, cold rooms) for mango cashew kokum, plus micro-irrigation and on-farm water storage to reduce weather risk; working capital lines for dairy/fisheries under KCC-AH/Fisheries; and cluster-based horticulture tied to FPOs/SHGs/PACS so that finance can flow against clear seasonal plans. That's also where livelihoods become less volatile and women's enterprises scale beyond micro.

8.8.2 Sindhudurg Field notes

Across talukas, SHGs meet regularly, save consistently, maintain records, and access bank credit with ~95-99% on-time repayment. A recurring concern from SHG leaders: part of the enterprise-labelled loans is diverted to consumption (house repairs, fees, appliances). The fix that members themselves propose is stricter phasing of disbursements, small revolving working-capital lines, and mentoring on stock-cycle planning so that business cash isn't cannibalized by emergencies. Women-led units that combine book-keeping discipline + market access are holding the line on repayment even in bad seasons.

Long-running kokum processors (e.g., making agal and value-added products) and new multi-product food units created during the COVID period show what “graduation” looks like: steady working capital, basic packaging assets, and collective marketing. One group opened a Mumbai retail point for Sindhudurg products, pulling in 15-20 local women on wages/contracts. The playbook: start with a small SHG loan, keep on-time repayment, reinvest in a sealer, dehydrator, or grinder, and pool procurement/transport for margins.

NGO & technical backbone -

- Bhagirath Gram Vikas Pratishthan (BGP) runs a WEHAB approach (Water, Energy, Habitation, Agriculture, and Biotechnology): biogas at scale (10,000+ units built), dairy skills, and youth training. Dairy is used as a “village nucleus” a daily congregation point that doubles as a problem-solving forum and a quick-cash livelihood.
- Chetana Mahila Vikas Kendra has seeded 100+ SHGs locally and keeps them moving with capacity building (group governance, financial literacy, internal lending, and enterprise skills). Alumni stories include women who train other women, build small brands, and diversify income sources.
- DBSKKV (Vengurla) is the science bridge: improved mango (e.g., Sindhu, Ratna), nine new cashew varieties, >20 tools/implements tailored for Konkan, and KVK extension that gets SOPs into orchards and paddy fields. Fisheries R&D through the Marine Biological Research Station supports Konkan-wide value chains.

Many migrate and bounce back; the openings that “stick” is agri-food entrepreneurship (dehydrated fruits, pickles, sweets), tourism products (homestays, mangrove/ecology tours, village experiences), and e-commerce for direct-to-consumer sales. Where peer groups and NGOs mentor on packaging, labelling, shelf-life, and compliance, youth stay longer and reinvest profits. Network gaps mobile coverage, market linkages, diversified training menus are still binding constraints.

Families finance nets and boats via SHGs/banks; catch volatility is high and cashflows lumpy. Access to affordable revolving funds is the difference between surviving a bad week and exiting the trade. Climate shifts earlier/heavier pre-monsoon rains now overlap with peak harvest windows for mango cashew kokum, damaging crops and compressing raw material supply for processors.

Enterprise climate what bankers & officials observe.

- UMED/Mission Shakti reports ~10,000 women's SHGs district-wide, ~8,000 processing units (cashew, tourism, small businesses). They're piloting 'Umed-Mart' and cross-district collaborations to solve raw-material and market gaps.
- Lead Bank highlights a cautious borrowing culture in Konkan; SHGs are the exception with near-universal repayment. Entrepreneurship is not yet proportionate to loan volumes many orchard loans are taken, fewer businesses actually start pointing to the need for richer, sector-specific training and market access.
- District Industries Centre flags youth uptake of Annasaheb Patil loans (interest refunded on time repayment) and short CM Yuva Karyakari placements, while also noting manpower shortages in departments that slow processing.

Primary sectors & climate pinch.

- Horticulture is expanding eastwards (pomegranate, custard apple), yet the west faces wildlife pressure and protected-area rules that farmers fear.
- Kokum & cashew processors reported raw-material shortfalls this year due to early May monsoon; costs rose and production targets slipped.
- Cashew units (~350, by industry accounts) struggle with labour costs and working capital; many buy raw nuts from outside the district because local quality/aggregation is inconsistent and outside traders lock up bulk at farm-gate. AIF/credit lines tied to procurement + storage + shelling/peeling capacity would stabilize them.
- Tourism is turning into a youth anchor homestay, guides, food ventures especially where SHGs backstop small investments and network coverage is reliable.

Integrated Pathways to Livelihood Resilience

1. Post-harvest basics for mango/cashew/kokum grading, pack-houses, cold rooms, drying sheds so SHGs and FPOs can aggregate and bargain.
2. Working capital that matches seasonality (orchard, fisheries, dairy), including KCC-AH/Fisheries and SHG/JLG lines with cash-credit features.
3. Cluster strategies (“one cluster one product”, not one-district one-product), because micro-ecologies differ by taluka.
4. Extension + compliance SOPs from KVK/DBSKKV, GI/branding for crafts (Sawantwadi wooden craft now has a GI), and light-touch support on FSSAI, label, and accounting.
5. Digital + market links payment rails are there; the missing piece is assured offtake and logistics at the time of sale.

Sindhudurg's livelihoods rise fastest where orchards and paddy get water and storage, women's groups run the cash cycle, fisheries receive gear + cold chain, and post-harvest/market infrastructure turns high rainfall into stable, priced produce.

8.9 Raigad District

Table 95 Raigad - Demography, Land, Crops, Climate, Finance, Markets

Theme	Indicator	Raigad (latest available)
Geography & admin	Area; blocks; revenue villages; GPs	7,152 sq km; 15 blocks; 1,860 villages; 809 GPs
People	Population; rural/urban; SC; ST; literacy	26.34 lakh total (16.64L rural / 9.70L urban); SC 1.35L; ST 3.05L; literates 22.12L
Worker profile	Cultivators; agri labour; other workers	2.06L cultivators; 1.91L agri labour; 6.42L other workers
Agro-ecology	Zone; climate; soils	North Konkan Coastal; hot & humid; saline coastal alluvium & laterite
Rainfall	Normal vs. actual (mm)	Normal ~3,0613,080; actual ~3,2323,259 ('22-'23)
Land use	Forest; fallows	Forest ~1.48 lakh ha; current fallow ~70,190 ha; other fallow ~48,660 ha
Holdings	Small & marginal share; distribution	88% of holders are <=2 ha, operating ~43% of agri land (detail table below)
Groundwater	Status of blocks	All 15 blocks "Safe"
Crops	Major crops & productivity	Paddy dominates: 2023-24 area 89.46k ha; production 2.59 lakh MT; productivity 2,898 kg/ha. Finger millet smaller share.
Cropping pattern	GCA; NSA; intensity	GCA 1.47 lakh ha; NSA 1.41 lakh ha; intensity ~104% (2023-24)
Irrigation	Net irrigated; potential	Net irrigated ~7,000 ha; potential ~36,000 ha; GI area ~12,000 ha
Horticulture	Mango area	~15.9k ha ('22-'23); established Alphonso belt with new plantings
Fisheries	Marine infra; boats; inland waterbodies	45 jetties/harbours; 4,748 boats (2023-24); 565 tanks/ponds; 1 hatchery; brackish water 3,655 ha (733 ha developed)
Storage/markets	Cold storages; godowns	19 cold storages (~30k MT); 83 godowns (~7.70 lakh MT capacity)
Roads/rail	Connectivity	Pucca roads ~8,380 km; rail ~299 km
Finance (banks)	CD ratio (all agencies)	104% (Mar 31, 2024)
Credit flows	Priority sector (GLC) trend	₹4,656 cr ('21-'22) ₹6,284 cr ('22-'23) ->₹8,618 cr ('23-'24)
KCC & insurance	KCC coverage; PMFBY	KCC nos. fell 52,996 -> 39,484 ('22->'24); crop insurance coverage up to 72,580 policies ('23-'24)
SHGs	Credit linkage momentum	SHGs credit-linked: 8,102 in '23-'24; bank loan ₹2,906 cr (cum. disb); avg loan/SHG ₹3.58 lakh
MSME	GLC & units	₹48,574 cr disbursed ('23-'24); 30,634 units financed; 62,805 Udyog Aadhaar registrations (cum.)
PLP 202526	Priority sector potential	₹9,607 cr total; of which Agriculture ₹2,228 cr; MSME ₹5,416 cr; Housing ₹1,393 cr, etc.
Constraints (PLP)	Top issues flagged	Low assured irrigation; small holdings limiting mechanisation; SDI/skills gaps; push value-chains in horticulture & fisheries.

8.9.1 Rural Economy

Raigad's rural economy sits at the Konkan coast's intersection of heavy rainfall, fragmented holdings, and a long shoreline. Agriculture remains paddy-led and largely rainfed: gross cropped area fell from 1.68 to 1.47 lakh ha over '22-'24, and cropping intensity eased to ~104%, implying most land does only one season. Paddy productivity has improved (to ~2.9 t/ha in '23-'24), but area has dipped, and finger millet is now a small niche. Irrigation is the binding constraint: the district has ~36,000 ha of potential but only ~7,000 ha actually irrigated and ~12,000 ha gross irrigated; all 15 blocks are “Safe” for groundwater, yet surface control and storage are the binding levers for a second crop.

Horticulture and tree crops cushion cashflows. Mango plantings (~1516k ha) underline the Konkan orchard base, supported by cold-storage nodes (19 units; ~30k MT). Storage/godown capacity is significant (~7.7 lakh MT), but last-mile aggregation remains uneven given the terrain and smallholder structure.

Fisheries is the other anchor. The coast is thick with landing points (45 jetties/harbours) and a large active fleet (4,748 boats), while inland waterbodies (565 tanks/ponds) and brackish-water tracts (3,655 ha; ~733 ha developed) create scope for diversified aquaculture. Fisheries KCCs are rising (1,602 → 2,165 accounts; ₹988 lakh → ₹2,670 lakh disbursed in '22-'24), indicating growing formal working capital.

Financial intermediation is deepening. The overall CD ratio moved past 100% to 104% by March 2024. Priority-sector disbursements have surged for three straight years, driven chiefly by MSME (₹48,574 cr in '23-'24; 30,634 units). SHG credit linkage has also accelerated 8,102 SHGs credit-linked in '23-'24 with rising average ticket sizes suggesting stronger women-centred finance rails in rural blocks. KCC coverage has, however, declined in headcount (≈53k -> 39k), and PLP flags the need to push seasonal credit and investment credit back to growth.

Physical and market infrastructure are present but uneven inland. Roads (8,380 km) and rail (299 km) connect the coast to consuming centres, and cold storages/godowns offer backbone support. Yet low assured irrigation and small/marginal dominance (88% of holders operating 43% land) keep mechanisation limited and raise unit logistics costs from hamlets to markets. The PLP's 2025-26 thrust aligns with this: finance storage and on-farm water, push value-chains in horticulture and fish, and invest in skills/SDIs so rural enterprises can absorb credit productively.

8.9.2 Raigad Field notes

Spatial divide and project overhang. The northern belt is being reshaped by large public works the Navi Mumbai International Airport, Mumbai Goa highway expansion, and the Virar Alibaug industrial corridor. Land acquisition from 100+ villages has altered landholding patterns, incentives, and job choices. Real estate and factory-linked employment dominate here, while the southern belt leans on agriculture, orchards, and fisheries, with tourism emerging along the coast.

Agriculture under pressure, with pockets of commercial play. Kharif paddy is the staple on rainfed fields; rabi vegetables and fruits appear where water allows, with watermelon a notable cash crop that often sells at the farm gate to itinerant vendors. Mango, coconut, and cashew dot coastal and foothill tracts; cashew supports small processing sheds that give seasonal wage work to Katkari households. Holdings are small and fragmented; irrigation is limited; and hills/coastline constrain expansion. Rising farm wages (and a ₹500-700/day range in local factories and farm work) push up production costs and nudge youth toward non-farm jobs.

Fisheries and the commons. In Shrivardhan and neighbouring blocks, artisanal fishers report thinner near-shore catches as larger trawlers operate deeper and longer. Mangroves have spread over some abandoned parcels, yet face damage risks from industrial activity. Community accounts point to

untreated effluent hotspots and siltation that threaten bays; fishers link these to falling catch predictability and higher search time.

Livelihood mobility and aspirations. Youth migration to Mumbai and industrial townships is high; reverse migration spikes in shocks (e.g., pandemic) showed the coast's absorptive capacity in services and fisheries. Katkari communities remain the most vulnerable seasonal farm labour and sporadic cashew work predominate while Thakur households and Kunbi families with riverine land are relatively better placed. Land sales to developers and second-home buyers have accelerated around Karjat, Alibaug, Khopoli, and Khalapur, redistributing assets but also eroding farm-linked security for some families.

Education, skilling, and early transitions. Early marriage among tribal groups persists and truncates secondary schooling for girls. ITIs exist in blocks like Khalapur and Alibaug, but no infrastructure is available properly and apprenticeship pathways remain thin; industries are not consistently on boarding trainees. The result is a gap between rising aspirations and formal job readiness.

What changes livelihood math. Where orchards are tied to storage and assured offtake, and where fishers access working capital, nets/engines, and reliable landing/ice, incomes are steadier. Where cashew processing and women's collectives link to broader markets (tourist circuits, Mumbai retail), seasonal earnings thicken. Conversely, in hamlets far from jetties/roads or without irrigation/storage, households stay exposed to single-season agriculture and volatile fish landings.

Signals to act on. Last-mile irrigation and on-plot storage to support a second season; orchard/fish value chains with grade-based pricing and cold chain; skilling that is apprenticeship-backed and cluster-specific; simpler compliance and working capital for SHGs/FPOs; and environmental enforcement that protects mangroves and bays. These are the levers communities themselves point to when asked what would convert high effort into reliable income.

PART II
Maharashtra Rural Livelihoods Pathways 2035

(Inclusive, Sustainable & Prosperous Rural Livelihoods in Maharashtra)

Maharashtra Rural Livelihoods Pathways 2035

Overview

Maharashtra's rural heartlands underpin the state's bold Viksit Maharashtra 2047 vision of a $1 trillion economy, but smallholder farmers, women, and tribal communities confront intensifying climate risks, water scarcity, and market barriers that threaten livelihoods. 2035 represents a key midpoint milestone on this pathway, and these transitions need to be underlined by integrated approaches, innovation, as well as an ambitious vision. We believe in the vision of a green, inclusive self-reliant rural prosperity for rural Maharashtra. A roadmap to improve rural livelihoods in Maharashtra must focus on enhancing connectivity, promoting sustainable livelihoods, strengthening institutional platforms, improving employability, readiness for new and emerging sectors, entrepreneurial success and access to financial services & markets.

This chapter presents "Pathways 2035" towards green, inclusive and self-reliant rural prosperity—by weaving climate-resilient agriculture, regenerative natural resource management, and equitable inclusion through local institutions like FPOs, SHGs, and Gram Sabhas. Informed by ground realities, promising policies and collaborative insights from over 100 AFARM practitioner organizations, it maps actionable strategies across agriculture-allied sectors, NRM, social capital, economic landscapes, and digital inclusion to forge diversified, resilient incomes over the next 10 years.

The Roadmap is organized into the following domains

1. Livelihood Pathways in Agriculture & Allied Sectors
2. Livelihood Pathways in Natural Resources Management
3. Role of Social Capital in Implementation of the Pathways for Sustainable Livelihoods
4. Livelihood Pathways for Enhancing Rural Income of Vulnerable Communities
5. Role of Digital Technology in Achieving Livelihood Security for Rural Communities
6. Role of Social Science/Social Work Education in Livelihood Promotion
7. Advocacy with the Financial Ecosystem
8. Role of Philanthropy in Livelihood Promotion

1 Livelihood Pathways in Agriculture & Allied Sectors

Rural livelihoods in Maharashtra's agriculture and allied sectors face escalating climate risks, yet hold immense potential for transformation through diversified, resilient pathways that integrate crops, livestock, fisheries, and enterprises. This section outlines actionable strategies to scale climate-adapted systems, strengthen institutions like FPOs and SHGs, and promote women-led value addition, building on successes like PoCRA while addressing gaps in coverage and sustainability. The vision for this pathway is enabling rural livelihoods that are climate-resilient, diversified, eco-friendly, and income-generating for all farmers.

1.1 Agriculture - Sustainable Agriculture Systems

1.1.1 Scaling of climate-adapted cropping systems and technologies in vulnerable regions of Maharashtra

Promote climate-adapted cropping and policies emphasising Integrated Farming Systems (IFS), agroforestry, intercropping, and Broad Bed & Furrow (BBF) methods in rainfed areas, alongside improved nutrient management, mulching, composite planning, and development of climate-resilient technologies; standard operating practices such as use of bio-inputs, bio-materials, and rainwater management practices.

1.1.2 Building on Maharashtra's PoCRA (the Programme on Climate Resilient Agriculture), prioritize:

- High-value, low-water crops (millets, pulses, soybean, horticulture), to reduce Water Stress while improving profitability
- Robust seed systems for climate-resilient varieties to ensure timely access to high-yielding, drought-tolerant seeds of millets, pulses, and horticulture crops
- integrated soil-water management
- Intercropping and mixed-cropping models that combine millets and pulses with horticulture to optimise land use and reduce risk.
- Integrated nutrient and pest management promoting bio-inputs and low-cost practices tailored to diversified cropping systems
- Conservation agriculture practices such as minimal tillage, crop rotation, and residue retention to improve soil health and water retention
- Integrated Farming Systems that combine crops, livestock, horticulture, and fisheries, with on-farm resource recycling (e.g., manure, crop residues) and standardised training modules on IFS planning and management.
- Agroforestry systems promotion integrating trees—especially fruit and multipurpose trees—with crops and livestock to improve biodiversity and carbon sequestration

- Farmer training in climate forecasting and adaptive planning, linking seasonal forecasts to farm decisions.

1.1.3 Invest in continuous training and behaviour change

- Ensure sustained extension and behaviour-change support so climate-smart practices promoted by departments and initiatives like PoCRA do not fade once initial projects end; strengthen KVK/FPO-led, hands-on training and communication.
- Advocate fast-track DBT-based subsidy disbursal; simplify digital interfaces (apps with IVR/voice in Marathi) and use community mobilisers, small and marginal farmers—especially women and Adivasi communities—can easily access information and schemes.
- Leverage SHGs, FPOs, and cooperatives—with explicit quotas for women, youth, and SC/ST members—to organise smallholders into climate-resilient value chains (dairy, small ruminants, backyard poultry, NTFPs, high-value crops), drawing on evidence that women-managed compost and soil-health practices improve maintenance and outcomes.

1.1.4 Scale climate smart agriculture in rainfed and tribal districts

Prioritise integrated watershed development, soil-health improvement, protective irrigation through micro-irrigation, diversified cropping (pulses, oilseeds, fodder, horticulture), and agroforestry to stabilise yields and incomes under increasingly erratic rainfall.

1.1.5 Improve governance and finance for solar farming

Strengthen implementation of solar-powered irrigation and farming by:

- Establishing streamlined, single-window approvals.
- Ensuring vendor accountability through mandatory local service networks and after-sales support.
- Using blended finance—e.g., collateral-free micro-loans via JLGs, in partnership with NABARD and cooperatives—to provide 100% financing on 90–95% subsidised pumps, prioritising BPL and marginal farmers.
- Running awareness and maintenance campaigns through agri-extension networks and KVKs that also promote climate resilient and efficient water use practices.

1.2 Livestock - Sustainable Livestock Systems

1.2.1 Enhance breeding and veterinary services through a mix of models

Improve livestock productivity through better breeding services, expanded veterinary care, assisted reproductive technologies, and effective implementation of the Bovine Breeding Act

1.2.2 Democratize assisted reproductive technologies

Promote technological innovation to increase the proportion of female calves, using the Maharashtra Bovine Breeding Act as a platform to boost milk productivity and unlock climate-finance opportunities linked to low-emission dairy.

1.2.3 Build beekeeping and sericulture as niche livelihoods.

- Introduce beekeeping and sericulture as niche, women- and youth-led livelihoods, anchored in: tailored modular trainings (5-day to 30-day residential courses) through

institutes such as CBRTI Pune and the Directorate of Honey, Mahabaleshwar; mobile and on-site training units; and exposure visits to successful apiaries.

- Promote local "Master Trainers" among women and youth to break gender stereotypes
- integrate digital platforms for technical updates and case-sharing
- provide subsidised starter kits (50% grant/loan) with quality hives, colonies, veils, smokers, and extractors.

1.3 Fishery - Fresh Water Aquaculture

1.3.1 Promote integrated farming and value addition in fisheries

Support marine and inland aquaculture through schemes like PMMSY, with a focus on integrated farming (fish with poultry and other enterprises), value addition, and live marketing to reverse declining per-capita fisher incomes and under-utilised aquaculture potential

1.3.2 Scale community and SHG-led hatcheries and processing

Promote community and SHG-promoted private hatcheries and value-added fish enterprises, expanding home-grown models and adapting lessons from states like Odisha where SHGs run carp production, fish pickles, cutlets, momos, papads, and prawn-based products using improved processing, storage, and mobile vending technology. In Odisha's community pond rearing models, self-help groups and local communities utilize/ lease community-owned village ponds for integrated fish farming, including carp production. Two interesting models include an enterprise in Jagatsinghpur, Odisha, where SHGs have been capacitated in preparing value-added fish products such as fish pickles, fish cutlets, fish momos, fish papads, and prawn chutney powder; and a second model where SHGs are involved in improved processing and storage with modern technology like hand-operated and motorized fish descaling machines and refrigerated mobile fish vending kiosks to improve hygiene, shelf life, and market access for their products. Such models may be studied for adaptation.

1.3.3 Develop aquaculture in rainfed tanks and seasonal ponds

- Expand aquaculture in rainfed tanks and seasonal ponds using scientific methods and community management, addressing gaps in technical know-how, credit, and infrastructure through state Agriculture and Fisheries Departments.
- Local subsidies and technical assistance through Maharashtra's Agriculture Department should be leveraged.

Draw on models from Andhra Pradesh, Odisha, and Kerala where community-managed or leased rainfed ponds have generated significant per-hectare yields and high net profits for small farmers and tribal communities, improving nutrition and livelihoods. Rain-fed tanks and seasonal ponds can be transformed into productive aquaculture systems, providing a sustainable source of income and food security for small-scale farmers in India. In Andhra Pradesh, the Watershed Support Services and Activities Network (WASSAN) implemented an initiative with tribal communities across 500 water bodies, promoting small-scale fish production for nutrition and livelihoods. One case study highlighted a farmer who successfully cultured Rohu, Mrigal, Grass Carp, and Common Carp in 0.07 acre seasonal pond, generating a net profit of ₹0.70 lakh in 11 months. In Odisha in villages like Kusumitara, community-owned fisheries were established in rain-fed ponds with support from the Fisheries Department and NGOs like Gram Vikas. The income generated helped the community financially, with average yields of around 4.51 tonnes per hectare. Similarly, in Kerala, farmers in villages such as

Thalavoor are successfully using derelict ponds leased from the local panchayat for fish farming.

1.4 Sustainable & Scalable Rural Enterprises

1.4.1 Build Enterprise Development Models that support Climate Resilient Farming

- Diversify household incomes away from exclusive dependence on rainfed agriculture into IFS-linked, high-value allied activities (commercial poultry, goatry, micro-dairy), backed by seed capital for commercial-scale operations.
- Strengthen and federate community institutions (producer groups, FPOs) into robust local ecosystems that manage bulk inputs, technical services, aggregation, processing, and market access for micro-enterprises.
- Scale local service cadres that support small and marginal farmers—para-veterinarians (pashu sakhis), "Hakdarshaks", agri-entrepreneurs, and similar intermediaries—on fee-for-service models to unlock sustained access to services and entitlements.
- Promote modern rural enterprises (digital services, delivery services, drone operations, modern CHCs) and localised green enterprises such as bio-input production, vermicomposting, organic farming, and eco-tourism.
- Provide strategic investment and long-term hand-holding (partial capital support plus SME mentoring) to connect enterprises to e-commerce platforms and bulk buyers, while prioritising women's leadership and economic participation across all enterprise activities.

1.4.2 Leverage MAVIM and MSRLM as institutional anchors

These institutions can anchor non-farm enterprise promotion, local resource-based value-addition clusters, and market convergence, building on GI-tagged clusters like Kolhapuri chappals and similar artisan and agro-processing clusters. Local knowledge, skills, and importantly, pre-existing clusters can set up enterprises for success. There are many well-known examples such as Kohlapur Chappals in Maharashtra; Madhubani painting in Bihar; Bhagalpur silk clusters.

SRLMs in several states are plying a role in enterprise support that Maharashtra can adopt. In Rayagada, Odisha state SRLM-backed cooperatives aid tribals in custard apple harvesting at optimal maturity, packaging, and urban market linkages amid abundant growth in blocks like Kalyansinghpur. Administration pushes fruit outlets during harvest and filler planting between orchards. Impacts involve higher profits beyond middlemen (previously Rs. 50 to 150/crate), economic uplift for thousands of collectors supplying Bhubaneswar/other states, and leveraging degraded lands for hardy fruit. In Jharkhand (Tribal Custard Apple): the government promoted custard apple (Arka-Sahan variety) via ICAR-supported mass cultivation in forests like Palamau/West Singhbhum, regularizing vendor-farmer cash deals. Outcomes feature 10,000 tonnes annual yield, vendor earnings of Rs. 600-1,000/day, low-investment scalability, and income boosts for farmers in Bundu/Tamar/Muri. Such models can be studied to design programs that can be implemented in partnership with the SRLM.

The efforts of the Maharashtra's Leather Industries Development Corporation (LIDCOM) to promote GI-tagged Kolhapuri chappals through artisan training, design innovation, market linkages, QR-code tech for traceability (artisan details, materials, certification), and e-commerce/digital onboarding to curb counterfeits can be adapted in other clusters in the state. This also demonstrates the success of market need based production. Bamboo, cashew nuts and Kolhapuri chappals are good examples of demand led product development.

1.4.3 Build comprehensive enterprise and leadership capacities of women's enterprises.

- Move beyond technical training to business skills, leadership, and governance capacities for women in cooperatives and livelihood collectives, adapting models such as SEWA Bharat's combined business and psychological empowerment modules; and specialized coaching for grassroots women to take up board membership of their enterprises.

1.4.4 Promote market-linked skilling for women

- Partner with KVKs to train large cohorts of women annually in post-harvest management, assaying and quality testing, and digital market linkage (e.g., e-NAM), enabling women to transition into higher-paid, formal roles along agri-value chains. Krishi Vigyan Kendras (KVKs) can be ancouraged to set a target to train 1 lakh women annually in post-harvest technology, assaying (quality testing), and digital market linkage (e-NAM transactions).

1.4.5 Use incubators and centres of excellence to support rural micro enterprises strengthening and scaling

- Link rural micro-enterprises to incubators and centres of excellence; draw on SRLM-linked models from Karnataka and West Bengal (SVEP, one-stop facilitation centres, partnerships with IIM-NSRCEL, cluster-based artisan support) to provide business services, infrastructure, and mentoring. Project Swavalambane, mentoring 148 women entrepreneurs on branding/marketing, generating sales enquiries, and achieving Udyam registrations. Impacts feature increased incomes for rural women, scaled non-farm businesses across 26 districts, and higher economic growth via professional support. Similarly, the WBSRLM supports over 8,833 SVEP enterprises, Aajeevika Grameen Express Yojana with interest-free loans for vehicle cooperatives, RSETI skill training, and clusters like mat weaving (Purba Medinipur) and embroidery (North 24 Parganas) and market linkages with both government procurement as well as known haats.

1.4.6 Diversify into off-farm and non-farm work

- Promote off-farm and non-farm enterprises—especially women-led—using replicable models such as SEWA's RUDI-type decentralised processing units, which have demonstrated significant income gains for women in several states.

1.4.7 Develop common infrastructure

- Invest in common infrastructure facilities (processing, storage, logistics, shared services) to reduce capital and operating costs for small enterprises, mirroring SRLM-led one-stop centres in states like Tamil Nadu.

1.5 Strengthening Institutions for Supporting Agriculture - Improving Custom Hiring Centres (CHCs)

1.5.1 CHCs play an important role in reducing costs and allowing smallholders access technology.

- Recognise CHCs, supported under SMAM and state top-ups, as critical for lowering mechanisation costs and improving access for smallholders; national schemes already subsidise 40–80% of capital costs and have enabled tens of thousands of CHCs and millions of machines.
- Reserve and actively promote CHC ownership and management for women's SHG federations, FPOs, and SC/ST groups in underserved talukas, since collective-managed CHCs show better outreach to poorer farmers and higher utilisation.
- Position CHCs as hubs for climate-smart mechanisation (conservation tillage, residue management, precision drills, water-saving equipment) and align CHCs in sugarcane, cotton, and millet belts with crop missions and FPOs, similar to Odisha's FPO-based millet CHCs.
- Odisha's operational modalities specify that subsidy for farm mechanisation (including machinery banks and CHCs) is met from multiple schemes (SMAM, RKVY, NFSM, state plan-Farm Mechanisation), which in practice gives districts access to a larger blended pool for custom hiring infrastructure than states relying primarily on SMAM plus a single state scheme. Maharashtra's state scheme functions more as a top-up to SMAM and crop-specific programmes (e.g. sugarcane harvester support in the ₹₹30–35 lakh range per unit with roughly 40% subsidy), rather than as a separate large CHC budget line.
- Pair capital subsidies with working-capital and revenue-stabilisation instruments (interest subvention, seasonal credit lines, performance-linked grants) to address

Several Indian states use subsidies and dedicated schemes to promote agricultural tool banks and Custom Hiring Centres (CHCs), typically under the national Sub Mission on Agricultural Mechanization (SMAM) plus state-funded top ups. These policies usually give 40–80% capital subsidy for machinery and have led to tens of thousands of CHCs nationally, with generally positive evidence on access, costs, and labour-saving for smallholders. By late 2023, more than 41,900 CHCs focusing on crop residue management and over 3.2 lakh machines had been supported under central schemes, often co funded 60:40 by Centre and states. States and NABARD also support CHCs through credit-linked models where banks finance the balance after subsidy.

Maharashtra, Odisha and Madhya Pradesh are all using the SMAM framework, but Odisha tends to provide somewhat higher subsidy and stronger state scheme integration for farm machinery banks, while Madhya Pradesh's "Custom Hiring Scheme" is more explicitly youth enterprise oriented; Maharashtra sits in the middle, with a broader mechanisation push, crop specific hubs (e.g. sugarcane) and reservations for women/SMF but less publicly disaggregated impact data

Maharashtra runs a State Agriculture Mechanization Scheme via MahaDBT that bundles support for individual farm machinery, farm machinery banks for custom hiring, and hi tech hubs for crops like sugarcane and cotton, building on SMAM norms. Odisha's farm mechanisation framework explicitly centres "Farm Machinery Banks" to facilitate custom hiring, with state operational modalities that knit together SMAM, RKVY, NFSM and a state plan scheme to fund both individual machinery and CHCs/tool banks.

• Madhya Pradesh's Custom Hiring Scheme under SMAM is framed as a self employment and decentralised mechanisation programme for 12th pass unemployed farmers (18–40 years), who are selected (often by lottery), trained and supported to run CHCs as local service enterprises. Maharashtra and Odisha also involve FPOs / SHGs / cooperatives, but MP's policy narrative is more explicitly about rural youth entrepreneurship through CHCs.

viability constraints found in several CHC evaluations.

- Standardise and support rigorous business planning, including model DPRs and locally appropriate machine mixes to avoid dead investments in rarely used equipment.

1.5.2 Conclusion

Recommendations prioritize Integrated Farming Systems (IFS), agroforestry, and niche activities like beekeeping and aquaculture in rainfed areas, with sustained extension via KVKs and FPOs to ensure smallholders—especially women and tribal communities—access DBT subsidies and markets. Solar irrigation governance improves through single-window approvals and blended finance from NABARD, while MAVIM/MSRLM anchors non-farm enterprises like GI-tagged clusters. Custom Hiring Centres (CHCs) expand for climate-smart mechanization, reserving ownership for SHG federations to boost utilization.

1.6 Stakeholder Roles

Stakeholder roles are essential for implementing the livelihood pathways in Maharashtra's agriculture and allied sectors, ensuring climate-resilient practices scale through coordinated action. The matrix below maps key actors to major recommendation clusters, drawing on PoCRA, MSRLM/MAVIM models, and multi-stakeholder convergence.

1.6.1 Matrix on role of Stakeholders

Table 96 Matrix on role of Stakeholders

Policy Actors (Govt Depts/PRIs)	Civil Society (NGOs/SRLMs)	Private Sector	Financial Institutions
Integrate into PoCRA Phase II; enforce seed systems, DBT subsidies via Agriculture Dept	Hands-on training via KVKs, watershed pilots (e.g., WOTR, AFARM)	Supply resilient seeds, bio-inputs; FPO aggregation	NABARD blended finance for IFS
Fast-track DBT, SHG quotas in schemes; PRI monitoring	SHG mobilization, CMRCs for behaviour change (MAVIM/MSRLM)	Digital apps (Marathi IVR), vendor training	Micro-loans for FPOs via cooperatives
Single-window approvals; solar pump subsidies	Awareness campaigns through extension networks	Local service networks, after-sales support	100% financing, collateral-free JLG loans
Implement Bovine Breeding Act; beekeeping schemes	Modular trainings, master trainers via CBRTI	Starter kits, digital platforms for sericulture	Subsidized loans for SHG-led units
Leverage PMMSY; dept subsidies for rainfed ponds	SHG-led hatcheries, Odisha model adaptation	Processing tech, mobile vending	Credit for community ponds
FPO promotion, CHC subsidies under SMAM	Enterprise incubation via MAVIM CMRCs, GI clusters	E-commerce linkages, incubators (IIM-NSRCEL)	Equity grants, working capital for FPOs

2 Livelihood Pathways in Natural Resources Management

Livelihood pathways in natural resource management (NRM) offer transformative potential for rural Maharashtra by integrating sustainable Land, water, forest, and climate practices to build resilience against scarcity and climate risks. This section outlines actionable strategies—from cluster-based water stewardship and managed aquifer recharge to community forest rights (CFR) implementation and pollinator-friendly farming—drawing on proven models from states like Karnataka, Gujarat, and Odisha to enhance economic viability for smallholders, women, and tribal groups.

2.1 Land Resources - Sustainable Land Use Management

2.1.1 Strengthen and mainstream an integrated approach to Sustainable Land Use Management (SLM) through rural livelihoods

Embed SLM in rural-livelihoods planning through smart land-use planning (zoning, green infrastructure, community participation) that safeguards soil, water, and biodiversity while maintaining productivity

2.1.2 Institutional convergence on land, soil and water:

Create and strengthen institutional convergence between soil and water departments, learning from dedicated watershed or soil-and-water departments in states like Karnataka and Meghalaya and integrated watershed programs under PMKSY 2.0.

2.1.3 Adopt ridge-to-valley watershed approaches:

Reduce fragmented interventions and systematically follow ridge-to-valley sequencing that combines drainage-line treatment (gully plugs, check dams) with area-based measures (bunds, contour trenches), using local materials and labour to reduce runoff and erosion.

2.2 Niti Aayog's Ease of Farming Initiative should be launched and implemented by the Government in Maharashtra

Operationalise NITI Aayog's "Ease of Farming" recommendations to address small landholdings, high costs, volatility, and climate risk by assessing and improving:

- Policy and governance.
- Investment and finance (including crop insurance).
- Technology and modernisation.
- Market access and value chains.
- Risk mitigation (climate resilience, insurance).
- Input costs (seeds, fertilisers, machinery).
- Skills and knowledge, including climate-smart agriculture

2.3. Conservation & Management of Water Resources

Ensure Water management systems that are sustainable, efficient, democratic, and grounded in NRM-based economic models, reversing the drift towards technocratic, fragmented responses by restoring integrated watershed development as the backbone of water-scarcity strategies.

2.3.1 Mainstream Water Stewardship and Cluster Approach in rural resource management and livelihoods

Organise clusters of 4–5 villages along hydrological, not political, boundaries to support water budgeting and stewardship, drawing on WOTR's water stewardship initiatives where cluster-based planning has improved groundwater recharge and resilience. WOTR's Water Stewardship Initiative in 100 villages sensitizes communities to water health, reducing overexploitation via evidence-led policies and ecosystem restoration. This cluster model enhances groundwater recharge, piped supply in priority areas, and resilience against extremes like drought.

2.3.2 Strengthen scientifically grounded Managed Aquifer Recharge (MAR).

Maharashtra leverages Jalyukt Shivar Abhiyan (JSA) and PoCRA with JalTara pits in Marathwada for recharge, but effective implementation requires a sound understanding of aquifers and the science of groundwater. Adopt practices like site-specific hydrogeological assessments, energy-efficient recharge wells, and monitoring to prevent clogging, converging with MGNREGS for community-led construction have all stabilized groundwater in critical areas in Gujarat. Tamil Nadu prioritizes rainwater harvesting pits and recharge shafts in urban-rural interfaces, linked to PMKSY for drought resilience.

2.3.3 Multi-level capacity building for groundwater management

Build capacities of communities, engineers, donors, and CSR agencies in aquifer mapping, site suitability, and water-quality management, using village-level dialogues and remote-sensing tools. Local initiatives in Maharashtra and Rajasthan involve village-level dialogues which can help foster scientific groundwater management. States like Gujarat emphasize public participation, risk assessment, and real-time monitoring apps to build stakeholder expertise.

2.3.4 Address groundwater quality alongside quantity

Integrate groundwater-quality monitoring (fluoride, salinity and other contaminants) using real-time sensors and treatment technologies such as biochar filtration, learning from Andhra Pradesh and Gujarat models that link quality monitoring to management decisions. The state can adopt Andhra Pradesh's model that monitors fluoride and salinity by integrating real-time sensors for quality assessment in over-exploited areas. Gujarat's task force model also integrates biochar filtration at scale.

2.3.5 Expand micro-irrigation coverage

Scale drip and sprinkler irrigation to improve water-use efficiency, drawing on PMKSY–Per Drop More Crop experience in Andhra Pradesh, Karnataka, and Punjab, and model similar incentives and convergence (e.g., with Birsa Munda schemes) for Maharashtra's sugarcane and semi-arid belts. Andhra Pradesh leads in drip irrigation coverage, saving water and boosting yields under PMKSY's Per Drop More Crop, with high adoption in semi-arid zones. Karnataka excels in sprinkler systems, enhancing efficiency in drought-prone districts like

Kalaburagi through subsidies and productivity gains. Punjab offers 80-90% subsidies on drip and sprinklers, modelled for Maharashtra's sugarcane via Birsa Munda scheme convergence.

2.3.6 Promote rainwater harvesting and recharge structures

Widen adoption of farm ponds, check dams, and percolation tanks to enhance groundwater recharge, building on widespread use across Maharashtra.

2.3.7 Strengthen community-based watershed planning

Integrate soil and water conservation with livelihood generation via NRM-linked employment, learning from participatory watershed programs such as Karnataka's Sujala and Odisha's community-budgeted watershed initiatives that have significantly raised groundwater yields and local ownership.. While there are many homegrown models other states offer many replicable models. For instance, Karnataka's Sujala project engages 7,000 communities across 742 micro-watersheds through participatory planning, forming 4,300 farmer groups for soil conservation, water harvesting, and livelihood integration, raising groundwater yields significantly. Extensive capacity building and NGO partnerships ensure community ownership, with thematic maps aiding integrated micro-plans. Odisha's watershed programs restore degraded lands with community budgeting, closing spending gaps in vulnerable districts.

2.3.8 Scale water budgeting and participatory planning

Institutionalise participatory water budgeting that covers agriculture, livestock, and domestic needs, embedding these processes in Gram Sabhas and local committees.

2.3.9 Promote solar-powered irrigation with safeguards through subsidies and improved technologies.

Expand solar-powered irrigation for off-grid reliability and fossil-fuel reduction, taking cues from Gujarat's Suryashakti Kisan Yojana and Andhra Pradesh's large-scale daytime-power auctions, while embedding safeguards against over-extraction. While Maharashtra offers subsidies, there are good practices that can be adopted. For example, Gujarat's Suryashakti Kisan Yojana deploys pumps reducing diesel use. Andhra Pradesh auctions 6.4 GW for free daytime power, replicable via NABARD for smallholders.

2.3.10 Enable Water-smart cropping through MSP and subsidy reform

- Support a shift from water-intensive crops to millets, pulses, and oilseeds in vulnerable regions through competitive MSPs, subsidy realignment, and strong extension and market linkages, recognising successful diversification efforts.
- Focus on smallholders, especially women, via targeted support and farmer-to-farmer learning platforms to scale water-smart cropping and associated nutrition and income gains
- Recognise and correct distortions in water allocation and use where urban centres over-appropriate agricultural water and per-capita consumption exceeds realistic needs, ensuring more equitable and efficient use across regions and communities.

2.3.11 Water smart cropping is scalable through policy support (MSP, subsidies for millets), tech adoption (drip irrigation, smart farming), R&D (better seeds, processing), and market linkages for value addition

Focusing heavily on smallholder farmers and women for equitable growth. To scale and strengthen this practice, farmers need Competitive MSPs for millets, pulses, and oilseeds to match rice/wheat incentives. Redirect subsidies from water-intensive crops to climate-resilient ones. Ensure efficient water use for irrigation using reserves of stored water. Less than 1/5th of land in Maharashtra is irrigated on the one hand; and while state has a largest number of stored water structures in the country.

2.4 Forests and Biodiversity, including Implementation on FRA, CFRA: Strengthen Forest Protection Committees (FPCs)

Vision: Regenerate ecosystems while sustaining Livelihoods

2.4.1 Deepen Joint Forest Management by devolving decision-making for NTFP collection, enabling FPCs to lead community-based biodiversity monitoring and sustainable use

2.4.2 Prioritize indigenous species in Afforestation Drives

Reorient state afforestation/plantation drives away from fruit-tree-only approaches towards indigenous and drought-tolerant tree species (e.g., Neem, Peepal, Banyan, Jamun, Reetha, Baheda), which better support biodiversity, soil health, water retention, and climate resilience while contributing to forest-cover targets (33% forest cover goal by 2030).

2.4.3 Implement a package of nature-positive practices and emphasize scientific management of the forests

Promote a package of nature-positive forest and farm practices—agroforestry, soil-health management, and integrated livestock—alongside composting, microbial inoculants, and reduced tillage (including BBF) that can significantly increase microbial carbon, reduce fertiliser needs, and improve moisture conservation.

2.4.4 Integrate livestock for nutrient cycling and income

Encourage mixed farming that integrates goats, poultry, and cattle to strengthen nutrient cycling and diversify incomes, leveraging recent policy recognition of animal husbandry as agriculture to expand access to concessional credit. Goats contribute 33.1% of gross income with low investment while poultry can offset crop losses and boost net returns up to 101%. Recent policy recognizes animal husbandry as agriculture, enabling 4% loans and subsidies for smallholders.

2.4.5 Promote pollinator-friendly farming

Create pollinator habitats (flowering borders, reduced pesticide use, native vegetation) given strong evidence that such practices increase bee visits, seed-set, and crop productivity while supporting broader biodiversity. Evidence shows that natural farming on sunflower boosts bee visits by 25% and seed setting. Studies in Khultabad identify 23 bee species, while relocation initiatives restore pollination for 75-95% of flowering plants.

2.4.6 Strengthen CFRA implementation and community-based governance

- Empower Gram Sabhas and CFRMCs through FRA kits, district-level campaigns, and NGO partnerships to develop micro-plans, manage forests (patrolling, resource use), and link with GIS and open-data tools for planning.
- Establish dedicated FRA cells at district/sub-district levels for single-window support on claims, boundary mapping, and grievance redressal, scaling proactive administrative models such as those in Gadchiroli.
- Systematically link CFR management with Tribal Sub-Plans, Van Dhan Vikas Yojana, and MSRLM for market linkages, financial literacy, and tech-enabled participatory inventories, reinforcing community ownership over roughly 40% of forests currently under Gram Sabha control.
- Scale successful models like Mendha-Lekha via study tours and federations, while resolving forest department conflicts through joint scientific management protocols.

2.5 Climate Change - Adaptation and Mitigation

Develop a climate-change adaptation roadmap for rural livelihoods that integrates vulnerability assessments, nature-based solutions, and technology-driven interventions, while recognising the positive role of traditional belief systems and rituals in conserving biodiversity.

2.5.1 Protect and mainstream indigenous conservation narratives: -

Document, protect, and promote indigenous stories, myths, and cultural practices around conservation, embedding them in national strategies such as the Biological Diversity Act, and scaling them through NGO–government collaborations that respect participatory models and avoid displacement.

2.5.2 Integrate vulnerability assessments and equity:-

Systematically integrate community-driven vulnerability assessment tools into planning, recognising differentiated risks (e.g., Marathwada smallholders, women, and marginalised groups) and using SHGs and other local platforms to map and address social and economic inequities.

2.5.3 Use digital climate-information services and behaviour change:-

Deploy advanced, mobile-based weather and advisory services (e.g., three-day forecasts for INM/IPM) and reorient interventions towards cognitive and behavioural change, ensuring that farmers can interpret and act on climate information.

2.6 Conclusion

Cluster-based water stewardship organizes 4-5 villages hydrologically for budgeting and recharge, as these NRM pathways can regenerate ecosystems, secure year-round water via micro-irrigation, and diversify incomes through agroforestry and livestock, targeting Maharashtra's 33% forest cover goal by 2030 while prioritizing women and smallholders. Multi-stakeholder collaboration—policy for incentives, civil society for grassroots execution, networks for scaling models, donors for innovation finance, and think tanks for data-driven monitoring—ensures integrated, democratic implementation, yielding equitable livelihoods and climate security.

2.7 Stakeholder Roles

Stakeholder roles in enabling livelihood pathways for natural resource management (NRM) in rural Maharashtra require coordinated action across policy, civil society, networks, donors, and think tanks to scale water stewardship, forest governance, and climate adaptation. This matrix draws from proven collaborations in Maharashtra's PoCRA and watershed programs, ensuring equitable implementation for smallholders and women.

2.8 Stakeholder Matrix

Table 97 Stakeholder Matrix

Stakeholder	Role
Policy Actors	Craft MSP reforms, FRA cells, hydrological clustering, Mandate Gram Sabha integration in watersheds library, Allocate budgets for PMKSY convergence library, Track outcomes via GPDP metrics library
Civil Society	Advocate democratic water budgeting, Mobilize villages, SHGs for MAR/CFR via dialogues, Leverage MGNREGS for structures library, Partner with NGOs like WOTR for stewardship
Networks	Push PRI-CBO convergence library, Form FPCs, federations for NTFP library, Support market linkages via MSRLM, Exposure visits, study tours (e.g., Mendha-Lekha) library
Donors	Influence subsidy realignments library, Train on aquifer mapping sensors, Finance PoCRA pilots, blended models library, Vulnerability assessments library
Think Tanks	Policy briefs on SLM integration, Tech tools like GIS for planning, Innovate biochar, pollinator habitats, Data-driven monitoring, replicable models

3 Role of Social Capital in Implementation of the Pathways for Sustainable Livelihoods

3.1 Education: Treat Education and Skill-building as Foundational for Rural Employability, aligning secondary-level Curricula with NEP2020's emphasis on Vocational exposure

3.1.1 Implement Vocational Training Provision under NEP effectively

- Form district NEP cells to roll out the 5+3+3+4 structure and ensure at least 50% vocational exposure by Class 8, tailored to local resources and livelihood opportunities.
- Mandate teacher training in multilingual pedagogy and digital tools (with CSR support for rural infrastructure), and create local tie-ups with skilling centres so vocational tracks in agriculture value chains, agro-processing, dairy, digital literacy, green technologies, agro-mechanics, and digital marketing are available.

3.1.2 Skilling for demand-based employability and entrepreneurship is critical to close the aspiration gap

- Design employability programs targeted at rural women and youth that are explicitly aligned to emerging climate-smart and rural-market opportunities, scaling proven models such as Vigyan Ashram's DBRT (with ITI and NSQF linkages) and using school management committees for local market assessments.
- Leverage Maharashtra's Startup Policy 2025 and Skill India PPPs (e.g., CSR-funded solar labs) for rural entrepreneurship hubs; hard-wire inclusion through quotas (e.g., 40% girls/SC/ST participants) and metrics (such as 20% green job placements) with district-level tracking to ensure tribal and rural equity.

3.2 Develop SHG Federations / CMRCs

As core social-capital institutions for inclusive development, extension, and ownership; when communities are trusted and given control, development processes become more sustainable and responsive to local needs.

3.3 Strengthen the role of Farmer Producer Groups and Companies in rural transformation

- Farmer Producer Companies (FPCs) in India succeed through targeted interventions in governance, market linkages, financial access, and capacity building, drawing lessons from states like Maharashtra, Odisha, Karnataka, and Telangana. Maharashtra leads with

over 1,600 new FPOs registered since 2020, supported by projects like MACP that boosted farm profits by 45% via aggregated marketing and reduced input costs by 7%. Odisha's 900+ FPOs across 30 districts emphasize hub-and-spoke models, achieving 400% sales growth for lighthouse FPOs like Gopalpur through better procurement and logistics.

3.3.1 Comprehensive framework for FPO performance

- Develop a comprehensive framework to design, monitor, and evaluate FPO/FPC performance, drawing systematically on lessons from successful models. This should include clear indicators on governance, member services, financial performance, value addition, and market outreach.

3.3.2 Study the Implications of GST rationalization

- Undertake a detailed analysis of the 2025 Goods and Services Tax (GST) rationalization and its implications for FPCs and smallholders. Recent changes have substantially reduced GST rates on several agricultural inputs and processed food products, lowering cultivation costs, easing the inverted duty structure, and improving the viability of rural enterprises.

3.3.3 Streamline compliance and access to schemes

- In partnership with ecosystem institutions (producer collectives, NBFCs, NGOs, incubation centres), simplify administrative and legal compliance requirements for FPCs. Clearly prioritize FPCs as beneficiaries in existing and new government schemes (for example, farm mechanization support, storage and primary processing subsidies) so that they receive predictable, targeted support.

3.3.4 Shared backbone for market access

- Create a shared “market access backbone” for FPCs by integrating them with digital platforms such as the electronic National Agriculture Market (e-NAM) and the Open Network for Digital Commerce (ONDC). Facilitate regular buyer–seller interactions to connect FPCs directly with processors, exporters, institutional buyers, and public procurement systems,

3.3.5 Federated structures and state platforms

- Promote state-level and regional federations of FPCs to pool resources, achieve economies of scale, and provide collective market linkage, risk management, and policy advocacy. Leverage State Rural Livelihood Mission (SRLM) architectures and CMRC-style federations in Maharashtra, integrating FPO promotion with SHG platforms for collective finance and training, similar to Kerala’s PRI–SHG convergence experience. Build on models from Telangana and Karnataka where state departments support inputs, procurement, and futures trading through NCDEX, and from Maharashtra’s MahaFPC, which has handled pulses and other commodities at significant scale through a federated network.

3.3.6 FPO strengthening and women's entrepreneurship

- Link FPO strengthening explicitly with women’s economic empowerment.
- Support women-led enterprises in processing, packaging, aggregation, and local marketing, using FPCs and SHG federations as platforms.
- Facilitate women’s access to affordable credit, digital tools, extension services, and branding/marketing support.

- Promote local procurement and institutional market linkages (e.g., PDS, school nutrition schemes, anganwadis) that prioritise women's producer groups and FPCs.

3.4 Role of Panchayat Raj Institutions

Sustainable development outcomes in rural areas are closely tied to livelihoods, health, education, child nutrition, water sufficiency, environmental quality, social protection, and local governance. India now uses national and state-level SDG indices; similarly, village-level indices are needed to drive local accountability and planning. Maharashtra is localising the SDGs to the Gram Panchayat level through the Panchayat Development Index (PDI), which aggregates multiple indicators across nine themes to monitor progress on Local SDGs. This framework is being piloted in selected panchayats and provides a robust basis for village-level planning and performance improvement.

3.4.1 Enable govts to adopt the Panchayat Development Index as a partnership between the govt and civil society organizations

Adopt and adapt the PDI framework to monitor and support panchayats on nine thematic areas that align the 17 SDGs with local development priorities. The nine themes are:

- Poverty-free and enhanced livelihoods village
- Healthy village
- Child-friendly village
- Water-sufficient village
- Clean and green village
- Village with self-sufficient infrastructure
- Socially just and socially secured village
- Village with good governance
- Women-friendly village

3.4.2 Ensure there are transparent and open monitoring and data systems

Use the PDI's combination of mandatory and optional indicators, drawing data from line departments and validating at GP, block, district, and state levels. This enables PRIs to track progress, identify gaps in service delivery, and design evidence-based Gram Panchayat Development Plans (GPDPs).

4 Livelihood Pathways for Enhancing Rural Income of Vulnerable Communities

4.1 Preamble:

Rural Maharashtra faces a dual challenge: ensuring dignified, sustainable employment for its growing youth population while strengthening resilience among small and marginal farmers who are increasingly vulnerable to climate change. Addressing these structural constraints calls for an integrated approach that combines human capital investment, climate-smart production systems, and localized enterprise ecosystems.

This pathway emphasizes leveraging existing public infrastructure, education and skilling reforms, and new models of Rural Economic Zones (REZs) to generate diversified livelihood opportunities. The intent is to catalyse a rural transformation that is youth-driven, technologically empowered, and climate-resilient — aligning with the state's long-term development vision for inclusive growth.

4.2 Recommendations

- Accelerate Rural employment and skilling leveraging available public infrastructure and schemes
- Address the gap between high secondary-school dropout rates and limited vocational training capacity.
- Expand the number and throughput of ITIs and government vocational programmes, with a target of doubling annual capacity to 18 lakh by 2030 and 25 lakh by 2035.
- Implement the National Education Policy (NEP) 2020 with urgency in rural, tribal, and peri-urban Maharashtra, with explicit targets to reduce dropout rates after Class 9 from 38% to below 20% by 2030 and below 10% by 2035.
- Strengthen Atal Tinkering Labs (ATLs) across Maharashtra through mandatory training and periodic evaluation of ATL staff, and rigorous assessment of student learning and innovation outcomes.
- Build on Maharashtra's legacy as the birthplace of FabLab by establishing at least one FabLab in each cluster and one "Super FabLab" in each district by 2030. Ensure that every engineering college, diploma institute, and ITI either hosts a FabLab or has access to one within a 10 km radius.
- In clusters severely affected by climate change, prioritise climate-resilient and climate-protected agriculture for small and marginal farmers. Encourage local manufacturing and servicing of relevant technologies by MSMEs to create additional rural manufacturing and service jobs
- By 2030, advocate for the establishment of "Rural Economic Zones" (REZs) in all clusters along state highways to cluster agro-processing, services, and logistics.

- Expand the REZ approach to all clusters by 2035, ensuring that each cluster hosts at least one functional REZ linked to local producer organisations.

4.3 Stakeholder Matrix: Key Responsibilities

Table 98 Key Responsibilities

Stakeholder	Key Responsibilities
Department of Skill Development and Entrepreneurship (MSDE)	Expand ITI and skill centre capacity; align curricula with industry demand; monitor NEP 2020 vocational targets.
Department of School Education	Reduce dropout rates through NEP rollout; improve school-to-skills transition in rural/tribal districts.
Directorate of Technical Education (DTE)	Integrate FabLabs and ATLs in college and ITI ecosystems; ensure technical quality and innovation outcomes.
District and Cluster-level Panchayats	Identify sites for FabLabs, REZs, and skill hubs; mobilize youth participation; coordinate with local MSMEs.
MSMEs and Rural Enterprises	Manufacture, maintain, and service climate-smart technologies; promote local entrepreneurship and employment.
Department of Agriculture and MVAIT	Provide climate-resilient input support; co-locate Agri-tech pilots and protected cultivation demonstrations
NGOs and Development Foundations	Mobilize communities; provide soft-skill and enterprise training; ensure inclusion of women and marginalized groups.
Financial Institutions and NABARD	Design blended finance and credit products for youth enterprises and MSMEs
Private Sector / CSR Platforms	Provide patient capital and collateral free loans for rural and vulnerable populations to participate in income generation
Academic and Research Institutes	Evaluate impact of training, technology adoption, and performance; provide evidence for scaling.

4.4 Summary and Conclusion

The establishment of REZs as localized growth nodes, coupled with climate-resilient production and MSME-led employment, forms a comprehensive roadmap for enhancing rural incomes. Sustained collaboration among government departments, local institutions, and private players will be essential to translate this blueprint into measurable impact — ensuring that every rural youth and farming household has access to dignified, future-ready livelihoods.

5 Role of Digital Technology in Achieving Livelihoods Security for the Rural Communities

5.1 Preamble:

Digital technology has emerged as a key enabler of livelihood security in rural Maharashtra, offering new ways to improve productivity, strengthen resilience, and create employment. The integration of artificial intelligence (AI), precision agriculture, digital inclusion schemes, and skill development platforms is reshaping how farmers and rural youth engage with markets, climate information, and government support systems. However, the technological transition must be ethical, inclusive, and adaptive, ensuring that innovation enhances—rather than replaces—human capability. A participatory approach that involves farmers, youth, local institutions, and private innovators can help Maharashtra build a digitally empowered rural economy responsive to both climate and livelihood challenges.

5.2 Technology and Innovation for Rainfed areas

- Promote an ethical and adaptive approach to precision farming that optimises resource use and improves yields while empowering, not displacing, farmers in rainfed areas.
- Scale real-time weather forecasting and climate advisory services that enable farmers to make informed cropping and risk-management decisions.
- **Support AI and tech innovation with farmers rather than for farmers:** Establish a community-based AI and Agri-tech Innovation Center to deploy new technologies for field-level impact with farming communities.

5.3 Digital Inclusion in Agriculture-Govt Schemes

The Government of Maharashtra has rolled out multiple digital systems—including Agristack, Farmer ID, and mobile applications with chatbots—to support direct benefit transfers and respond to farmer queries. AI applications are increasingly used to provide crop advisories, pest and disease warnings, groundwater status, and localised weather information, under the state's emerging MahaAgri-AI policy.

- Ensure that these platforms are user-friendly in local languages, backed by field verification, and accessible to women and marginal farmers.
- Encourage organisations such as Krushi Vikas and other partners to embed AI and digital monitoring tools into their programme cycles for real-time learning and course correction

5.4 Deploy Digital Technology for Skill Development & Rural Employment for Rural Youth

- Build an integrated ecosystem that links digital technology, skill development, and rural employment pathways, rather than treating them as siloed agendas.
- Promote Massive Open Online Courses (MOOCs) tailored for rural youth and marginal farmers, with a target of reaching at least 50 lakh learners over the next decade.
- Combine "hard skills" (technical, vocational, digital) with "soft skills" (communication, problem solving, teamwork) in all major skilling initiatives.

5.5 Promote Digital Inclusion of last mile Communities for Social Security

- Scale models like Haqdarshak that bridge the information and access gap between citizens and welfare schemes by supporting discovery, eligibility checks, and application processes.
- Improve access to start-up finance for MSMEs and strengthen financial literacy so that communities can effectively leverage credit, insurance, and social protection instruments.

5.6 Green Skills and Youth Engagement

- MKCL KF's "Integrated Agriculture" course for Grade 9–12 students demonstrates how long-term, practice-oriented learning can prepare youth for "green collar" jobs in agriculture and allied sectors. Capacity building at a young age, combined with hands-on exposure and local experimentation, can motivate both young and practising farmers—including women—to pursue sustainable farming careers.
- Scale such integrated green-skills curricula for young farmers, practising farmers, and women farmers across Maharashtra, using blended learning and local demonstration plots.
- Encourage colleges and universities to align their course offerings with NEP 2020 and emerging green career pathways, ensuring that rural youth can build viable livelihoods in climate-resilient sectors

5.7 Stakeholder Matrix: Key Actors to Operationalize Recommendations

Table 99 Key Actors to Operationalize Recommendations

Stakeholders	Primary Roles and Responsibilities
State Government Departments - Department of Agriculture; Skill Development & Entrepreneurship; School & Higher Education; Rural Development	Lead implementation, funding, and regulatory oversight of digital and green-skilling programs; scale digital infrastructure and farmer databases (e.g., Agristack).
Technology and Innovation Agencies Maharashtra Knowledge Corporation Limited (MKCL), MahaAgri-AI Cell, Maharashtra Remote Sensing Application Centre (MRSAC)	Develop and localize digital platforms, integrate AI in farming advisories, and support innovation hubs at the district level.
Private Sector and Start-ups - agri-tech firms (e.g., CropIn, DeHaat, Stellapps), fintechs, and social enterprises (e.g., Haqdarshak)	Co-create solutions with rural users, offer scalable technology models for climate-smart farming and inclusion, and link farmers to digital financial systems.
Research institutions - State universities; technical colleges; ICAR institutes	Design region-specific curricula for digital and green skills; evaluate performance and enable evidence-based policy recommendations.
Farmer Organizations and Collectives - Farmer Producer Organizations (FPOs), women's self-help groups (SHGs), cooperatives	Act as channels for technology dissemination and feedback systems; ensure equitable access to digital tools for women and marginal farmers.
Civil society organizations - Krushi Vikas, KPSF Foundation, NABARD, UNDP, TATA Trusts	Facilitate pilot projects, promote digital literacy, measure impacts, and scale inclusive digital models across districts.
Gram Panchayats, MSRLM clusters, district training centers	Mobilize rural youth, coordinate last-mile outreach, and ensure community participation in technology rollouts.

5.8 Conclusion

Digital transformation can redefine rural livelihoods in Maharashtra if guided by inclusion, ethics, and co-creation. Empowering farmers and youth through accessible technology, adaptive learning systems, and localized innovation ecosystems will sustain both productivity and equity. As the state advances its digital agriculture and skill development policies, collaboration across sectors—government, private, academic, and community-based—will be critical to ensuring that technology becomes a tool for rural prosperity, not exclusion.

6 Role of Social Science/Social Work Education in Livelihood Promotion

6.1 Preamble:

Social science and social work institutions play a pivotal role in shaping inclusive and sustainable development pathways by bridging knowledge and practice. Institutes such as TISS Tuljapur exemplify this through their integration of teaching, research, training, and community engagement. However, much of higher education in these fields remains theoretical, with limited direct involvement in transforming rural livelihoods. In the context of India's evolving development priorities, there is a growing need to realign social science and social work education to address real-world challenges, foster innovation, and strengthen linkages between academia and communities.

6.2 Recommendations

6.2.1 The vision is to establish a collaborative, practice-oriented ecosystem where universities, practitioner organisations, and communities co-create sustainable livelihood solutions through research, field-based learning, and social innovation. The pathway envisions social science institutions as catalysts of change — institutions that produce development professionals grounded in community realities, capable of designing and implementing transformative livelihood interventions with sensitivity to gender, equity, and sustainability.

6.2.2 Social science and social work institutions such as TISS combine teaching, research, training, and community outreach, and are uniquely positioned to act as field-level change agents. To move from theory-heavy education to practice-oriented learning, long-term engagement with communities is essential, in line with UGC's emphasis on “Professors of Practice” and experiential learning.

6.2.3 Foster deep collaborations between universities, practitioner organisations, and communities on sustainable livelihoods, natural resource management, social innovation, and development policy.

6.2.4 Provide social science and social work students with extensive 2–3 month internships and structured fieldwork, including action research, dissertations, and case study documentation that bridge academic, policy, and grassroots practice.

6.3 Conclusion

Transforming social science and social work education into a practice-centered, partnership-driven model will enhance the sector's contribution to rural development and livelihood promotion. By embedding experiential learning and co-creation into academic structures, institutions can nurture a generation of social work professionals who are not only analytical thinkers but also effective field practitioners. This approach aligns with national priorities for skill-based learning, responsive education systems, and sustainable community development.

6.4 Stakeholder Matrix: Roles and Actions for Implementation

Table 100 – Roles and Actions for Implementation

Stakeholders	Key Roles
Universities and Institutes of Social Work (e.g., TISS, state universities)	Curriculum innovation, faculty development, coordination with field partners
UGC and Higher Education Departments	Policy direction, accreditation, and funding support
Practitioner Organisations (NGOs, CBOs, social enterprises)	Field mentorship and collaborative research
Local Communities and Producer Groups	Active participants and co-researchers
State Livelihood Missions and Development Departments	Systems integration and scaling of models
Donors and CSR Foundations	Funding praxis based evidence and knowledge dissemination Creating centers of excellence

7 Role of Philanthropy in Livelihood Promotion

7.1 Preamble:

Philanthropy has the potential to serve as the connective tissue across Maharashtra's fragmented rural development landscape. While government departments, NGOs, CSR agencies, and community-based organizations (CBOs) all contribute to livelihood promotion, their efforts often remain siloed — leading to duplication, inefficiency, and missed opportunities for scale. Over the next decade, strategic philanthropy can catalyze convergence across these actors, enabling long-term, outcome-oriented partnerships grounded in accountability, transparency, and local ownership.

A 10-year strategic policy framework is therefore essential to institutionalize these collaborations — aligning financial, technical, and human capital toward shared goals of sustainable and inclusive rural livelihoods. This framework would help build durable institutional mechanisms such as pooled financing platforms, digital monitoring tools, coordinated CSR efforts, and professionalized NGO capacities, ensuring that Maharashtra's rural households are better equipped to thrive in a changing climate and economy.

7.2 Recommendations

7.2.1 A 10-Year Strategic Policy Framework for Strengthening Rural Livelihoods through Coordination of NGOs, CBOs and CSR in Maharashtra with government entities

7.2.2 Build Multi-Year Compact Partnership Agreements defining roles, deliverables, and accountability.

7.2.3 Create a Pooled Fund combining CSR, NABARD, and State resources for large-scale livelihood projects.

7.2.4 Facilitate government partnerships and coordination proactively

- Establish a state-level NGO–CSR Help Desk to facilitate permissions, resolve bottlenecks, and share information on government schemes and priorities.
- Introduce multi-year compact partnership agreements that define roles, deliverables, and accountability across government, NGOs, and CSR partners.
- Create a pooled fund that combines CSR, NABARD, and state resources for large-scale, multi-district livelihood programmes.
- Set up a cross-departmental Project Management Unit (PMU) to coordinate planning, monitoring, and convergence across agriculture, rural development, skills, and social protection departments.

- Implement a digital MIS and public dashboard to track funds, outputs, and outcomes.
- Promote a one-window clearance system for NGO–CSR project approvals and registrations.
- CSR and district-level coordination
- Establish district-level CSR coordination platforms chaired by the District Collector to align CSR investments with local priorities, improve transparency, and reduce duplication.
- Mandate annual CSR disclosure and impact assessments aligned with state livelihood and SDG priorities, with results integrated into district and GP planning processes

7.2.5 Philanthropy has a critical role to play in NGO capacity strengthening

- Build the capacities of at least 500 NGOs in project design, results-based management, financial governance, and legal compliance.
- Establish a transparent NGO registration, audit, and accreditation system linked to an updated state NGO portal.
- Enable accredited NGOs to become validated implementing partners under government and CSR livelihood schemes.
- Encourage NGO consortia and federations to implement large-scale, multi-thematic programmes.
- Promote knowledge-sharing platforms and independent evaluations to ensure quality, learning, and course correction.

7.2.6 CSR engagement

- Encourage long-term (3–5 year) CSR–NGO partnership contracts for rural livelihood interventions, moving away from fragmented one-year grants.
- Prioritise CSR investments in sustainable and scalable rural livelihood models, including climate-resilient agriculture, value chains, and skills.
- Establish a CSR–State Impact Investment Facility to mobilise blended finance from corporations, philanthropies, and social investors for high-impact livelihood projects.

7.2.7 CBO strengthening

- Strengthen SHG and FPO federations with business planning, digital, and value-chain management capacities.
- Mandate a “Livelihoods Chapter” in every Gram Panchayat Development Plan (GPDP), developed in consultation with CBOs.
- Support community-based natural resource management and local enterprise development as core strategies for resilient rural livelihoods.
- Promote women's and youth entrepreneurship through structured mentorship, incubation, start-up support, and access to finance.
- Integrate CBOs into government, private, and CSR supply chains to secure market access and long-term sustainability

7.2.8 Stakeholder Matrix: Roles in Ensuring Implementation

Stakeholder	Core Roles and Responsibilities
State Government	Provide policy backing, institutional anchoring (via RD, Agriculture, Skills, and WCD departments), and dedicated PMU support. Establish regulatory clarity and performance-linked disbursement systems.
District Administration	Lead CSR coordination platforms, integrate CSR and NGO efforts into GPDPs, and ensure convergence across flagship schemes.
Philanthropic Foundations	Design and fund long-term anchored collaborations; invest in NGO capacity building; host knowledge and data platforms.
CSR Entities	Align CSR spending with state livelihood priorities, adopt multi-year partnership models, and co-invest through pooled or blended finance mechanisms.
NGOs and CBOs	Execute projects, ensure community ownership, and generate learning on scalable livelihood practices. Participate in monitoring and evaluation.
Financial Institutions (e.g., NABARD, SIDBI)	Co-fund large-scale livelihood projects, manage pooled funds, and provide credit and risk-sharing mechanisms for farmer and producer collectives.

7.2.9 Conclusion:

Philanthropy can be the vital catalyst that transforms a fragmented ecosystem into a coherent, aligned, and scalable livelihood promotion system in Maharashtra. By institutionalizing convergence — through compact partnerships, pooled financing, NGO professionalization, and robust coordination mechanisms — this 10-year framework ensures that each rupee spent generates lasting, measurable impact.

If effectively implemented, these coordinated efforts will create the foundation for resilient rural economies — where women, youth, and smallholders participate as equal economic actors and communities gain sustainable pathways out of poverty.

8 Advocacy with the Financial Ecosystem

8.1 Preamble:

Rural transformation depends not just on productive assets or skills, but on sustained access to fair and flexible finance. Yet, despite policy intent, rural credit systems remain skewed toward larger borrowers, while smallholders, micro-enterprises, and agri-ancillary actors operate on the margins of formal finance. Addressing this imbalance requires a deliberate shift in how the financial ecosystem perceives, prioritizes, and serves rural livelihoods. Effective advocacy can connect policy reforms, institutional practices, and evidence-based narratives that make low-income rural populations visible and bankable—not as high-risk beneficiaries, but as viable economic participants.

8.2 Recommendations

8.2.1 Advocate with the banking sector to treat rural livelihoods—particularly smallholders, micro and small enterprises, and agri-ancillary activities—as priority segments for credit.

8.2.2 SRLMs should leverage the State Level Bankers' Committee (SLBC) and regional banking forums to revise operational guidelines of Regional Rural Banks and other institutions to improve outreach to small and marginal clients.

8.2.3 Donors should de risk innovation and build evidence to influence the mainstream financial ecosystem; support evidence generation and fund blended finance models

8.2.4 Encourage critical reflection on skill-development financing so that an exclusive focus on vocational education does not inadvertently deepen inequality or exclude the poorest.

8.2.5 A systemic gap persists between rural credit supply and the diverse needs of smallholders, particularly women and youth engaged in non-farm and agri-ancillary activities. Financial institutions remain cautious about small-ticket, rural loans due to high transaction costs, weak collateral, and lack of tailored products. Platforms such as SLBCs offer underused opportunities to influence operational guidelines and align banking mandates with state livelihood priorities. Affordability of education and skilling is emerging as a complementary concern—families often sacrifice productive investments to pay rising training costs, thereby undermining long-term income security. Equity risks in skill finance call for balance: vocational and livelihood programmes must be inclusive, not limited to those who can already afford them.

8.2.6 Advocacy with the financial ecosystem is crucial to reframe how rural credit is prioritized, delivered, and monitored. It requires coordinated messaging across government, banks, donors, and civil society to ensure that livelihoods, education, and skill development are part of an integrated inclusion agenda. By influencing banking norms, building evidence on

repayment performance, and highlighting the socio-economic costs of exclusion, this strategy aspires to create a more accountable and responsive financial architecture for rural India.

8.3 Stakeholder Matrix: Core Roles in Implementation

Table 101 Core Roles in Implementation

Stakeholder group	Core roles in implementation
State government (Finance, Rural Development, Agriculture, Skill, Education departments)	Set overall policy direction so that rural livelihoods, education and skilling are treated as integrated public priorities. Issue government orders/MoUs with banks to prioritise smallholders, women, and micro-enterprises in credit targeting
State Level Bankers' Committee (SLBC) and lead banks	Translate policy directions into coordinated banking action across the state. Revise and monitor operational guidelines for commercial banks, RRBs and cooperatives to improve outreach to small and marginal clients.
Regional Rural Banks (RRBs), cooperative banks, small finance banks	Act as frontline providers of customised, lowticket rural credit. Simplify processes (KYC, documentation, turnaround time) for marginal clients, using BCs and digital channels
Commercial banks and NBFCs (including MFIs)	Provide capital, innovate products, and colend with RRBs/others to deepen outreach.
NABARD, SIDBI and development finance institutions	Provide refinance, policy guidance and capacity building for inclusive rural finance.
Donors, philanthropies and CSR funders	Derisk innovation and build evidence to influence the mainstream financial ecosystem. Support evidence generation Fund blended finance models Convene multistakeholder platforms to align donor, government and banking agendas
Training, skilling and education institutions (including NSDC ecosystem)	Ensure that financing of skills and education does not exclude the poorest. Embed financial literacy and counselling in training programs
Civil society organisations, cooperatives, SHG federations, FPOs	Act as interface between rural households and the formal financial system. Aggregate demand for livelihood and education finance, and negotiate better terms on behalf of members
Research and policy institutions, think tanks and universities	Provide evidence and framing for high-quality advocacy. Develop policy briefs and toolkits for engaging SLBCs, regulators and banks on inclusive finance Track and disseminate good practices across states to influence guidelines and scheme design.

9 Conclusion of the Chapter

9.1 These pathways champion climate-resilient practices such as integrated farming systems, agroforestry, and water-smart cropping, alongside NRM innovations like cluster-based stewardship and community forest rights to restore ecosystems while generating sustainable livelihoods. Policymakers drive enabling reforms via DBT subsidies and MSP shifts; civil society and NGOs build capacity, innovations, and facilitate institutional strengthening; philanthropic and CSR partners fuel blended finance and incubation with patient long-term capital; all converging through local institutions for women-led, youth-empowered action.

9.2 Realizing this vision demands unified stakeholder roles government anchoring policy convergence, civil society fostering community ownership, philanthropy scaling innovations, and CSR bridging infrastructure gaps—to empower marginalized voices and build a thriving rural Maharashtra by 2035. Through rigorous monitoring via tools like the Panchayat Development Index, these efforts will not only boost incomes and resilience but cultivate enduring ecosystems of inclusion, securing the state's prosperous, sustainable future.

9.3 These interconnected pathways from climate-smart farming and NRM regeneration to skilling via REZs, FPO strengthening, and digital tools—offer Maharashtra a blueprint for equitable rural renewal, prioritizing women-led enterprises, youth employability, and community governance. Multi-stakeholder action, anchored by government schemes, SHG federations, NABARD finance, and NGOs like AFARM, have critical and complementary roles to play to drive implementation, monitored through tools like the Panchayat Development Index. By 2035, this vision promises thriving rural ecosystems where every household accesses resilient livelihoods, securing Maharashtra's path to a prosperous, green future.

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List of Individuals and Institutions visited during Field Visit of Status of Livelihood Report

Civil Society Organisations

1. Shri. Ram Kolekar & Shri. Balasaheb Kolekar, Shramjivi Janta Sahayyak Mandal (SJSM), Satara
2. hri. Shahaji Gadhire, Astitva Samajik Vikas va Sanshodhan Sanstha, Sangola, Dist. Solapur
3. Smt Chetna Sinha & Smt. Rekha Kulkarni, Mann Deshi Foundation, Mhaswad, Dist. Satara
4. Shri. Santosh Raut, Abhinav Bharat Abhinav Bharat Samaj Seva Mandal, Salse, Karmala, Dist. Solapur
5. Shri. Vijay Ramesh Bhise, Janvikas Sanstha, Kaij, Dist. Beed
6. Shri. H.P. Deshmukh, Yuva Gram Vikas Sanstha, Kaij, Dist. Beed
7. Shri. Lalasaheb Agale, Shri. Annasaheb Roham & Shri. Shailesh Mande, ManavLok, Ambajogai, Dist. Beed
8. Shri. Shivaji Khogare, Jayprabha Gramin Vikas Mandal, Ambajogai, Dist. Beed
9. Shri. Sharad Pawar, Anik Financial Services, Kaij, Dist. Beed
10. Shri. Pandurang Ghodake, Sahityaratna Lokshahir Annabhau Sathe Bahuuddeshiya Samajik Sanstha, Dharashiv
11. Shri. Prashant Gawande, Akola
12. Shri. Suresh Lule, Yuva Organisation, Akola
13. Dr. Kishor Moghe-Gramin Samassya Muti Trust (GSMT), Yavatmal
14. Shri. Tushar Hande, Sevadharma Shikshan Va Bahuudheshiya Sanstha, Akola
15. Shri. Rupchand Dakhane, Gram Aarogya Ghati, Kurkheda, Gadchiroli
16. Shri. Dattatrya Patil, Yuva Rural Association, Nagpur
17. Shri. Ashok Bang and Shrimati Nirupama, Chetna Sanstha, Wardha
18. Tarak Kate, Dharamitra, Wardha
19. Vibha Gupta, Magan Sangrahalaya, Wardha
20. Dr. Hemant Ogale, Shri.Umesh Shinde & Shri.Rushikesh Gawade, Dr.Hedgewar Seva Sanstha, Nandurbar
21. Shri. Bhimrao Bhalerao & Team, Swades Foundation
22. Shri. Arun Shivkar, Sakav Foundation
23. Shri. Prashant Patil, WOTR
24. Shri. Siddhesh, UMED Raigad
25. Shri. Ramesh Sakhare, Social Development Professional
26. Smt. Salama Alavi, Rural Communes team
27. Shri. Pramod Shinde & team, Saguna Baug
28. Shri. Roshani Ahurkar, SHG supported by MAVIM, Shivani
29. Fr. Godfrey Dlima Jan Sewa Mandal, Nandurbar

Experts, Activists, Academics

1. Shri. Vijay Jawandiya, Agriculture expert
2. Shri. Prakash Pohare, Editor

3. Shri. Dahatonde, KVK
4. Prof. Shri.Vijay Mane, Professor, Yashwantrao Chavan School of Social Work (YCSSW)
5. Shri. Satish Karande, Agri College, Vadala, Dist. Solapur
6. Shri. Mahendra Kadam, Vitthalrao Shinde Arts College
7. Shri. Ashwini Mhetre, Digital Sakhi Seva, Ghoti, Ta. Karmala, Dist. Solapur
8. Shri. Suresh Rathod & Shri.Sachin Chavhan, Agri Extension, Solapur
9. Shri. Santosh Dombe, MSRLM, Solapur
10. Shri. Shukracharya Bhosale, District Agri Officer, Solapur
11. Shri. Sanjeev Marathe & Staff, National Research Centre of Pomegranate (ICAR), Solapur
12. Dr. Tanaji Valkunde, KVK, Mohol, Dist. Solapur
13. Shri Umesh Thakare, KVK, Akola
14. Shri. Magar, KVK, Yavatmal

Government Officials:

1. Shri. Meshram, Rural Self Employment Training Institute, Gadchiroli
2. Shri. Tiwari, NABARD, Satara
3. Shri. Kale & Shri. Mokle, District Agriculture Department Officers
4. Dr. Yogesh Deshmukh, ATMA, Akola
5. Shri. Ramchandra Waghmare, NABARD, Akola
6. Shri. Santosh Dabare, District Agriculture officer, Yavatmal
7. Shri. Bende, Agriculture Officer, Kalamb, Dist. Yavatmal
8. Shri. A.V. Jadhav, District Coordinator Fishery Department, Akola
9. Shri. Gopluwad, Range Forest Officer, Kurkheda, Gadchiroli
10. Shri. Rupesh Chavan, Government ITI, Kurkheda, Gadchiroli
11. Shri. Jawale, Integrated Tribal Development Project (ITDP), Gadchiroli
12. Smt. Kranti, District Animal Husbandry Department, Yavatmal
13. Shri. Shambharkar, MGNREGA, Yavatmal
14. Shri. Patil, MGNREGA, Kurkheda, Gadchiroli
15. 5. Shri. Marekari, MSRLM, Kurkheda, Gadchiroli
16. Shri.Narendra Kakde, UMED, Akola
17. Shri. Kalpande, Shabari Mahamandal, Gadchiroli
18. Shri. Praful Patil, Shabari Mahamandal, Nandurbar
19. Dr. Mittali Sethi, Collector, Nandurbar
20. Shri. Choudhari, Nandurbar
21. Smt. Bankar, MAVIM, Nandurbar
22. Shri. Chandrakant Pawar, ITDP, Nandurbar

23. Shri. A.E. Tadavi, ITDP, Sindhudurg
24. Shri. Vaibhav Pawar, NABARD, Sindhudurg

Lead Banks:

1. Shri..Nayan Sinha, Central Bank of India, Akola
2. Shri.Dileep Chopade, Ghatanji, Yavatmal
3. Branch Manager, Bank of India, Kurkheda, Gadchiroli
4. Shri. Rajendra Pande, Vidharbha Kokan Gramin Bank, Akola

Farmers, individual beneficiaries and FPOs:

1. Shri. Krushan Thombare (progressive farmer), Sarpanch, Kanheri
2. Soyagold farmer producer company, Maregaon
3. Sangati Farmer Producer Company, Kurkheda, Gadchiroli
4. Shri.Dilip Naphade, Jaishankar FPO, Malkapur
5. Shri.Sushila Mankar, Shiroda
6. Shri.Saili Sitaram Gawade, Ansur
7. Shrimati. Pallavi Rajesh Gawade, Ramghat
8. Shrimati.Manali Tandel, Ubhadanda
9. SHG member- Smt. Sarla Ghane (Kanheri)
10. SHG member - Mamta Shivshankar (Tirzada, Yavatmal)
11. SHG member - Smt. Jai Lingo
12. Smt. Chourikar, CFR Committee member, Maldugi, Gadchiroli
13. Shri. Sahare, Kadholi, Gadchiroli
14. Shri. Vishal Patil, Aspirational Block fellow, Nandurbar
15. Shri. Rohan Gavit, fisheries businessman, Nandurbar
16. Villagers and beneficiaries of Waghale, Dist. Nandurbar
17. Shri. Rushikesh Gawade, Annapurna Gruha Udyog, Sindhudurg
18. Narmada Cashew factory, Vengurla

Abbreviations

Sr. No.	Acronym	Full Form
1	AAY	Antyodaya Anna Yojana
2	ACP	Annual Credit Plan
3	ACWADAM	The Advanced Centre for Water Resources Development and Management
4	AFARM	Action for Agricultural Renewal in Maharashtra
5	AH	Animal Husbandry
6	AHIDF	Animal Husbandry Infrastructure Development Fund
7	AI	Artificial Intelligence
8	AIF	Agriculture Infrastructure Fund
9	AISHE	All India Survey on Higher Education
10	AL	Agricultural Labour
11	AMC	Agricultural Marketing Committee
12	ANC	Antenatal Care
13	APMC	Agricultural Produce Market Committee
14	ARI	Acute Respiratory Infection
15	ASER	Annual Status of Education Report
16	ASUSE	Annual Survey of Unincorporated Sector Enterprises
17	ATIC	Agricultural Technology Information Centre
18	ATM	Automated Teller Machine
19	AUA	Aadhaar User Agency
20	AWI	Annual Wage Index
21	BAIF	Bharatiya Agro Industries Foundation
22	BBF	Broad Bed & Furrow
23	BCM	Billion Cubic Metre
24	BE	Budget Estimates
25	BFSI	Banking, Financial Services and Insurance
26	BHIM	Bharat Interface for Money
27	BJSY	Baliraja Jal Sanjivani Yojana
28	BLP	Block Level Plan
29	BMC	Biodiversity Management Committee
30	BPL	Below Poverty Line
31	BSKKV	Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth
32	CAG	Comptroller and Auditor General of India
33	CAGR	Compound Annual Growth Rate
34	CBO	Community-Based Organization

Sr. No.	Acronym	Full Form
35	CBRTI	Central Building Research Institute
36	CC	Cash Credit
37	CFR	Community Forest Rights
38	CHC	Community Health Centre
39	CKYCR	Central Know Your Customer Registry
40	COVID	Coronavirus Disease
41	CPI	Consumer Price Index
42	CROPSAP	Crop Forecasting System (using Remote Sensing, GIS & Weather data)
43	CRP	Community Resource Person
44	CS	Central Sector
45	CSO	Central Statistical Office
46	CSR	Corporate Social Responsibility
47	CV	Coefficient of Variation
48	DAY	Deendayal Antyodaya Yojana
49	DBRT	Diploma in Basic Rural Technology
50	DBSKKV	Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli
51	DBT	Direct Benefit Transfer
52	EC	Election Commission
53	EMR	Electronic Medical Records
54	ENT	Ear, Nose, and Throat
55	ER	Emergency Room
56	ESIS	Employees' State Insurance Scheme
57	EV	Electric Vehicle
58	EWS	Economically Weaker Section
59	FC	Finance Commission
60	FDI	Foreign Direct Investment
61	FIDF	Fisheries and Aquaculture Infrastructure Development Fund
62	FIF	Financial inclusion support
63	FPO	Farmer Producer Organization
64	FRBM	Fiscal Responsibility and Budget Management
65	FSS	Food and Social Security
66	FSSAI	Food Safety and Standards Authority of India
67	FY	Financial Year
68	GDDP	Gross District Domestic Product
69	GDP	Gross Domestic Product

Sr. No.	Acronym	Full Form
70	GER	Gross Enrolment Ratio
71	GI	Geographical Indication
72	GIS	Geographic Information System
73	GLC	Ground Level Credit
74	GP	Gram Panchayat
75	GPDP	Gram Panchayat Development Plan
76	GPI	Gender Parity Index
77	GRASP	Governance Reforms and Performance Management
78	GS	Gram Sabha
79	GSDA	Groundwater Surveys and Development Agency
80	GSDP	Gross State Domestic Product
81	GST	Goods and Services Tax
82	GSVA	Gross State Value Added
83	GVA	Gross Value Added
84	GW	Groundwater / Gigawatt (context-dependent)
85	HDI	Human Development Index
86	HH	Household
87	HIV	Human Immunodeficiency Virus
88	HWC	Health and Wellness Centre
89	HWE	Hours Worked per Employed Person
90	IAY	Indira Awaas Yojana
91	ICDS	Integrated Child Development Services
92	ICU	Intensive Care Unit
93	IFR	Individual Forest Rights
94	IFS	Indian Forest Service
95	II	Infrastructure Index
96	IITM	Indian Institute of Tropical Meteorology
97	IMD	India Meteorological Department
98	INM	Integrated Nutrient Management
99	IPHS	Indian Public Health Standards
100	IPM	Integrated Pest Management
101	ISFR	India State Forest Report
102	ITI	Industrial Training Institute
103	IVR	Interactive Voice Response
104	IYCF	Infant and Young Child Feeding

Sr. No.	Acronym	Full Form
105	JAM	Jan Dhan–Aadhaar–Mobile
106	JAY	Jan Arogya Yojana
107	JJAS	June–July–August–September (South-West Monsoon season)
108	JJM	Jal Jeevan Mission
109	JLG	Joint Liability Group
110	JSA	Jalyukt Shivar Abhiyan
111	JSY	Janani Suraksha Yojana
112	KCC	Kisan Credit Card
113	KISAN	Knowledge-based Integrated System for Agriculture and Nutrition
114	KUA	KYC User Agency
115	KVK	Krishi Vigyan Kendra
116	KYC	Know Your Customer
117	LAMPS	Large Area Multipurpose Society
118	LED	Light Emitting Diode
119	LFPR	Labour Force Participation Rate
120	LPA	Long Period Average
121	LPD	Litres Per Day
122	LT	Long Term
123	LTIF	Long Term Irrigation Fund
124	MACP	Modified Assured Career Progression
125	MAR	Mean Annual Rainfall
126	MAVIM	Mahila Arthik Vikas Mahamandal
127	MCP	Mother and Child Protection
128	MDF	Moderately Dense Forest
129	MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
130	MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
131	MIDH	Mission for Integrated Development of Horticulture
132	MIS	Management Information System
133	MJP	Mahatma Jyotiba Phule
134	MJPJAY	Mahatma Jyotiba Phule Jan Arogya Yojana
135	MMC	Maternal Mortality Case
136	MNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
137	MPCB	Maharashtra Pollution Control Board
138	MPCE	Monthly Per Capita Consumption Expenditure
139	MPI	Multidimensional Poverty Index

Sr. No.	Acronym	Full Form
140	MPKV	Mahatma Phule Krishi Vidyapeeth
141	MRLM	Maharashtra Rural Livelihoods Mission
142	MSAPCC	Maharashtra State Action Plan on Climate Change
143	MSBB	Maharashtra State Biodiversity Board
144	MSCB	Maharashtra State Cooperative Bank
145	MSDE	Ministry of Skill Development and Entrepreneurship
146	MSME	Micro, Small and Medium Enterprises
147	MSP	Minimum Support Price
148	MSRLM	Maharashtra State Rural Livelihoods Mission
149	MT	Metric Tonne
150	MUDRA	Micro Units Development and Refinance Agency
151	MVP	Maharashtra Village Panchayat
152	MW	Megawatt
153	MWRRA	Maharashtra Water Resources Regulatory Authority
154	NABARD	National Bank for Agriculture and Rural Development
155	NAFED	National Agricultural Cooperative Marketing Federation of India Ltd.
156	NAM	National Agriculture Market
157	NAPCC	National Action Plan on Climate Change
158	NBA	National Biodiversity Authority
159	NDDP	Net District Domestic Product
160	NDVI	Normalized Difference Vegetation Index
161	NEFT	National Electronic Funds Transfer
162	NEP	National Education Policy
163	NFHS	National Family Health Survey
164	NGO	Non-Governmental Organization
165	NHAI	National Highways Authority of India
166	NHM	National Health Mission
167	NITI	National Institution for Transforming India (NITI Aayog)
168	NPA	Non-Performing Asset
169	NPCI	National Payments Corporation of India
170	NPH	Non-Priority Household
171	NRCP	National Research Centre on Pomegranate
172	NRLM	National Rural Livelihoods Mission
173	NRM	Natural Resource Management
174	NSDC	National Skill Development Corporation

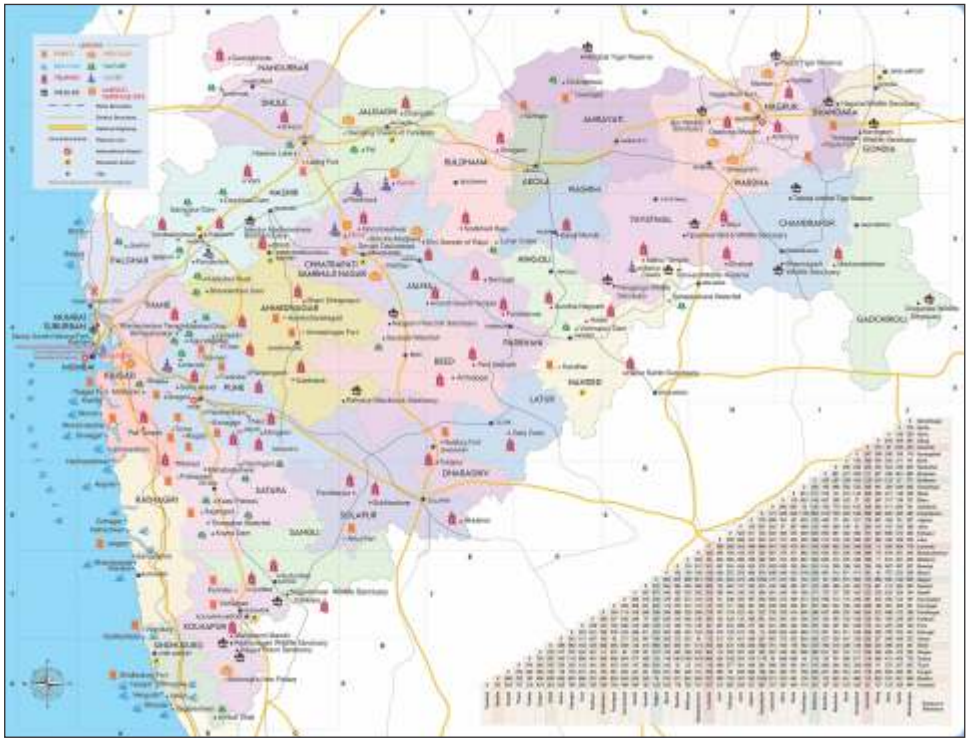
Sr. No.	Acronym	Full Form
175	NSQF	National Skills Qualifications Framework
176	NSS	National Sample Survey
177	NSSO	National Sample Survey Office
178	NTFP	Non-Timber Forest Product
179	OAE	Own Account Enterprise
180	OBC	Other Backward Classes
181	ODOP	One District One Product
182	OF	Open Forest
183	ONDC	Open Network for Digital Commerce
184	OPD	Outpatient Department
185	ORS	Oral Rehydration Solution
186	PACS	Primary Agricultural Credit Society
187	PAN	Permanent Account Number
188	PC	Per Capita
189	PD	Project Document
190	PDS	Public Distribution System
191	PESA	Panchayats (Extension to Scheduled Areas) Act, 1996
192	PHC	Primary Health Centre
193	PHH	Priority Household
194	PLFS	Periodic Labour Force Survey
195	PMFBY	Pradhan Mantri Fasal Bima Yojana
196	PMGDISHA	Pradhan Mantri Gramin Digital Saksharta Abhiyan
197	PMJDY	Pradhan Mantri Jan Dhan Yojana
198	PMKVY	Pradhan Mantri Kaushal Vikas Yojana
199	PMMSY	Pradhan Mantri Matsya Sampada Yojana
200	POS	Point of Sale
201	PPE	Personal Protective Equipment
202	PRA	Participatory Rural Appraisal
203	PRI	Panchayati Raj Institutions
204	PTR	Pupil Teacher Ratio
205	PVTG	Particularly Vulnerable Tribal Group
206	PWD	Public Works Department
207	QR	Quick Response Code
208	RCS	Registrar of Cooperative Societies
209	RD	Rural Development

Sr. No.	Acronym	Full Form
210	RDD	Rural Development Department
211	RFA	Recorded Forest Area
212	RH	Rural Hospital
213	RIDF	Rural Infrastructure Development Fund
214	SAPCCHH	State Action Plan on Climate Change and Human Health
215	SBI	State Bank of India
216	SC	Scheduled Caste
217	SDG	Sustainable Development Goals
218	SDRMF	State Disaster Response Mitigation Fund
219	SEBC	Socially and Educationally Backward Classes
220	SFAC	Small Farmers' Agribusiness Consortium
221	SHG	Self-Help Group
222	SIDBI	Small Industries Development Bank of India
223	SIRD	State Institute of Rural Development
224	SLA	Service Level Agreement
225	SLBC	State Level Bankers' Committee
226	SMART	Specific, Measurable, Achievable, Relevant, Time-bound
227	SOP	Standard Operating Procedure
228	SOPPECOM	Society for Promoting Participative Ecosystem Management
229	SOTR	States' Own Tax Revenue
230	ST	Scheduled Tribe
231	STARS	Skilling Training for Advancement in Rural Societies
232	STRIVE	Skills Strengthening for Industrial Value Enhancement
233	STRY	Skill Training of Rural Youth
234	TB	Tuberculosis
235	TDF	Tribal Development Fund
236	TGA	Technical Guidance Agency
237	TISS	Tata Institute of Social Sciences
238	TL	Term Loan
239	UC	Utilization Certificate
240	UCB	Urban Cooperative Bank
241	UDISE	Unified District Information System for Education
242	UGC	University Grants Commission
243	UMED	Maharashtra State Rural Livelihoods Mission
244	UNDP	United Nations Development Programme

Sr. No.	Acronym	Full Form
245	UPI	Unified Payments Interface
246	UR	Unemployment Rate
247	USD	United States Dollar
248	VDF	Very Dense Forest
249	VNMKV	Vasantrao Naik Marathwada Krishi Vidyapeeth
250	WASSAN	Watershed Support Services and Activities Network
251	WBCIS	Weather Based Crop Insurance Scheme
252	WC	Water Conservation
253	WCD	Women and Child Development
254	WEHAB	Water, Energy, Health, Agriculture, and Biodiversity (framework for sustainable development)
255	WHO	World Health Organization
256	WOTR	Watershed Organisation Trust
257	WPR	Worker Population Ratio
258	YASHADA	Yashwantrao Chavan Academy of Development Administration
259	ZP	Zilla Parishad

Thematic Sectoral Maps

1. Introduction



Map 1 Administrative Map of Maharashtra

3.2.3 Health Infrastructure, Staffing and Access



Map 2 District Level HCIs in Maharashtra as of May 2023

3.2.3 Health Infrastructure, Staffing and Access

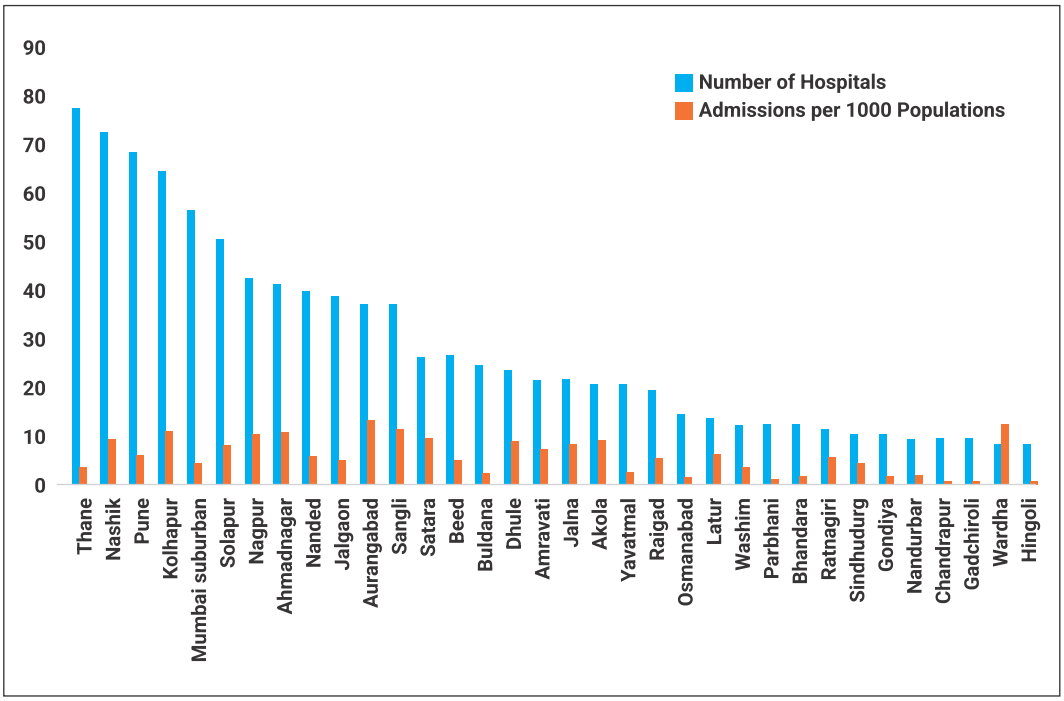
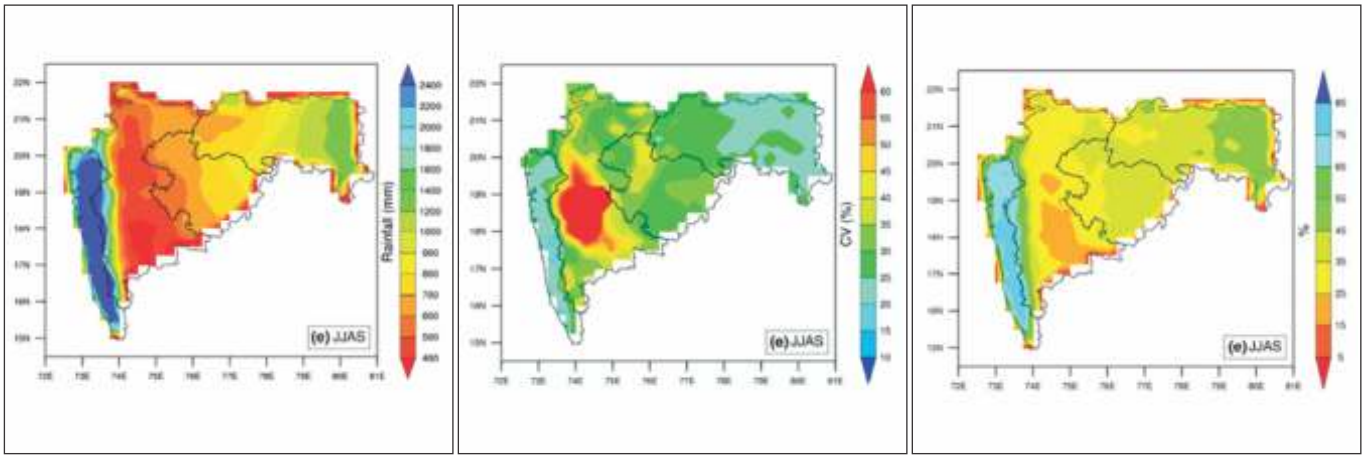


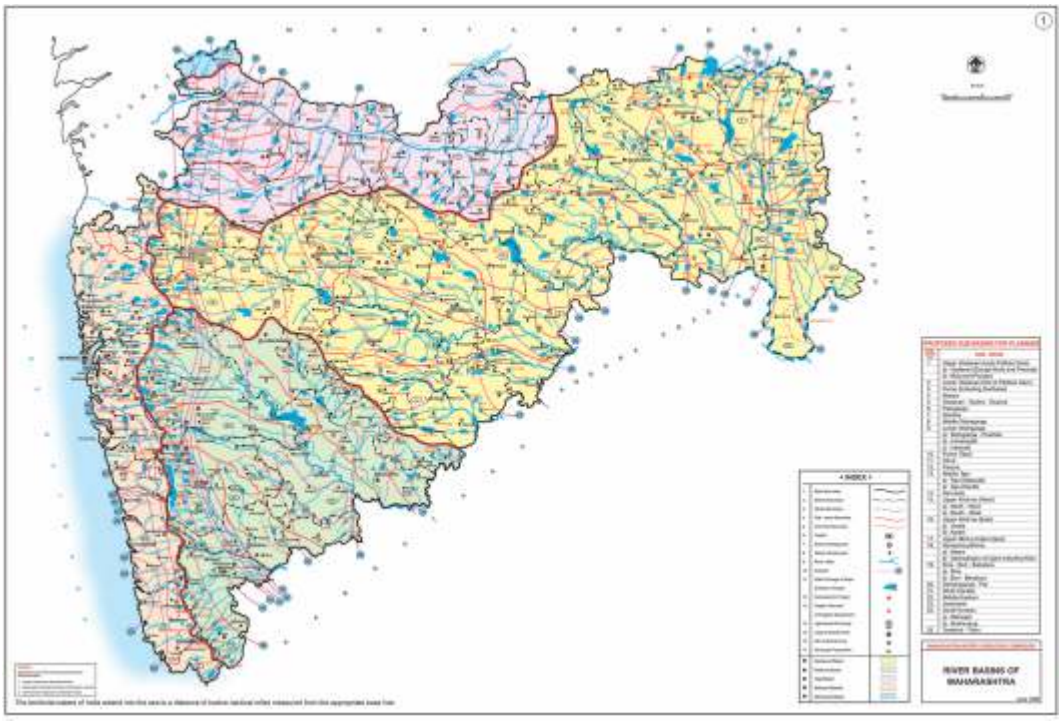
Figure 1: Number of Hospital in different districts and Admission per 1000 populations in Maharashtra 2023

5.2.1 Rainfall patterns: regional and seasonal differences, recent changes



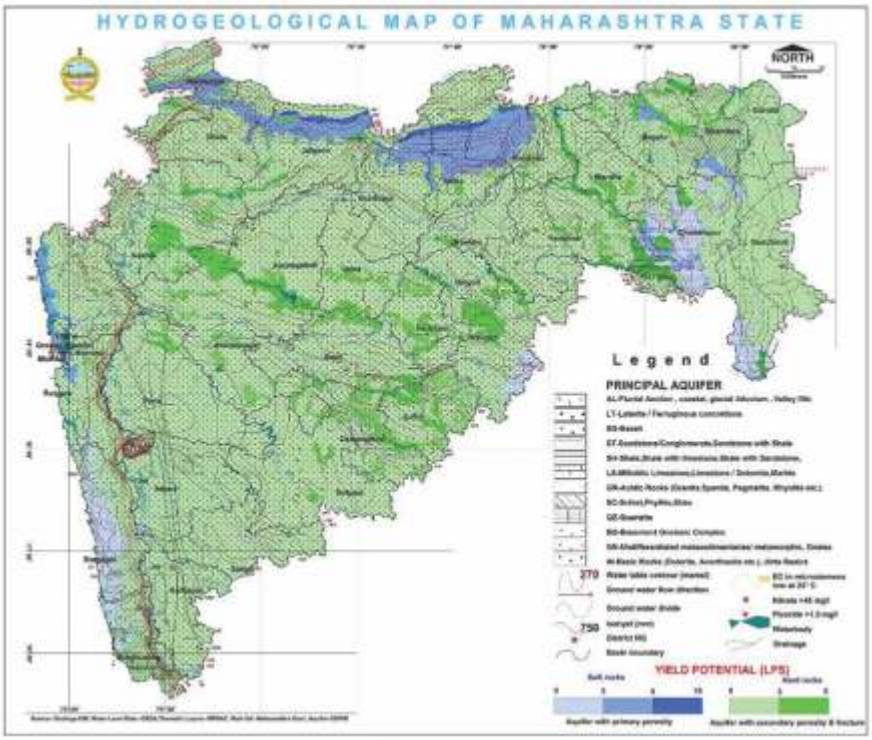
Map 3 Mean Rainfall pattern in mm, Coefficient of variation (CV) of rainfall in % and % rainy day's climatology in JJAS season over Maharashtra for the period 1901–2017.
Source: Journal of Earth System Science

5.2.2 River Basins, Dams and Surface Water Structures



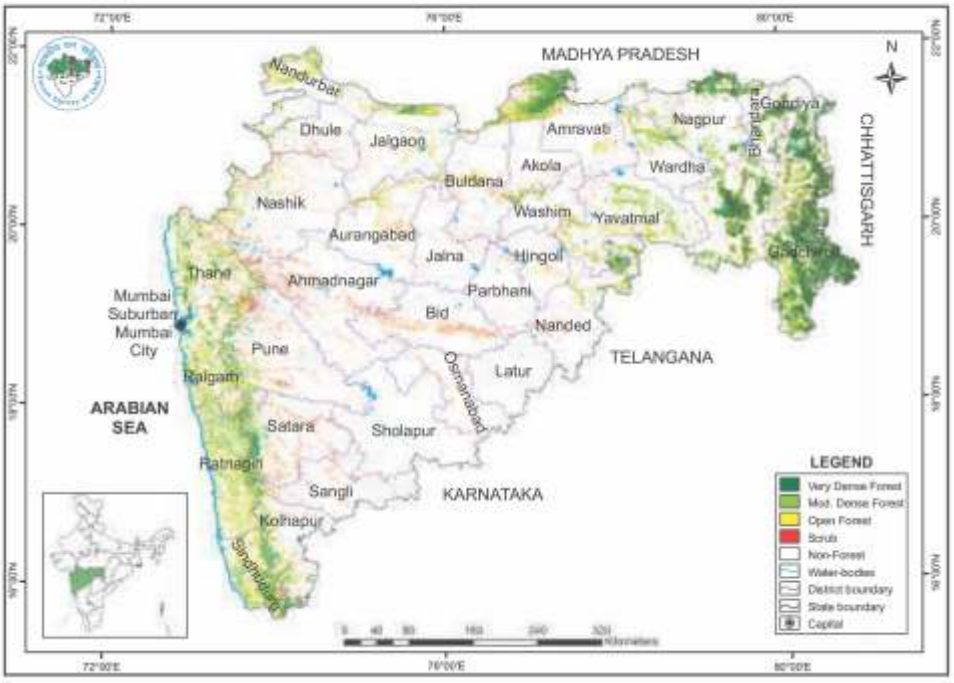
Map 4 River Basins, Dams and Surface Water Structures

5.2.3 Groundwater Status: Depletion and Recharge Challenges



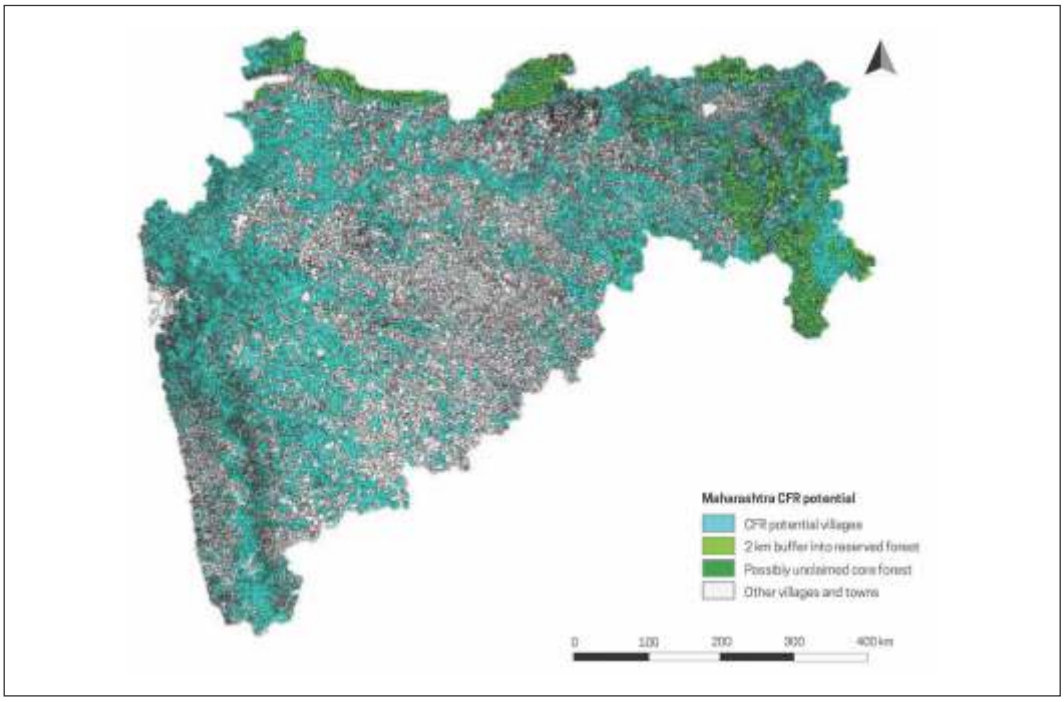
Map 5 Hydrological Map of Maharashtra

5.3 Jangal and Jeev Jantu: Forests and Biodiversity in Maharashtra



Map 6- Forests and Biodiversity in Maharashtra

5.3.3 Community Forest Rights (CFRs) and FRA Implementation



Map 7 CFR Implemented and Potential Source: ATREE

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