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Agricultural Policy and Rural Development in India: Challenges, Policy Gaps, and a Problem-Solution Agenda

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ABSTRACT: India has moved from chronic food scarcity to foodgrain self-sufficiency and diversified agricultural production, yet rural prosperity remains uneven. Agriculture and allied activities still support 46.1 per cent of the workforce while contributing nearly one-fifth of national income, illustrating both the sector's social importance and its productivity gap. This review examines the relationship between agricultural policy and rural development through a structured analysis of official statistics, policy reports, and research literature. It identifies eight interlocking constraints: fragmented operational holdings and insecure tenancy; regional and crop-wise productivity gaps; groundwater depletion and soil degradation; climate risk; weak price realisation and post-harvest systems; unequal access to credit, insurance, technology, and extension; gender and social exclusion; and insufficient creation of productive non-farm employment. Existing instruments—minimum support prices, procurement, input subsidies, crop insurance, income transfers, irrigation programmes, digital markets, farmer producer organisations, rural employment guarantees, self-help groups, and rural infrastructure—have produced important gains but often operate in silos and vary sharply in state capacity and accessibility. The article proposes a place-based strategy that redirects support from input use toward public goods and measurable outcomes, strengthens local water and land institutions, builds inclusive value chains through producer organisations, modernises risk management, recognises women and tenants as farmers, and links farm productivity with a job-rich rural non-farm economy. A sequenced implementation framework, with district-level diagnostics and transparent outcome indicators, is offered. The central argument is that rural development cannot be achieved by production policy alone: India requires an integrated food-systems and territorial-development approach that raises farm income, expands capabilities, restores natural resources, and creates dignified employment beyond cultivation.

KEYWORDS: Indian agriculture; rural development; agricultural policy; smallholders; climate resilience; farm income; value chains; rural employment.

I. INTRODUCTION

Agriculture has been central to India's economic transformation, food security, and political economy. Public investment in irrigation and research, the spread of high-yielding varieties, input support, procurement, and the public distribution system converted a food-deficit country into a major producer of cereals, milk, horticulture, and fisheries. The policy achievement is substantial: foodgrain production was estimated at 357.73 million tonnes in agricultural year 2024-25, while horticulture output also exceeded foodgrain output in volume. Agriculture and allied sectors recorded average annual real growth of roughly 4.4 per cent over the preceding five years, with livestock and fisheries growing faster than crops (Government of India, 2026, 2024b).

Production success, however, does not automatically yield broad-based rural development. Agriculture and allied activities accounted for 46.1 per cent of employment in 2023-24 but generated nearly one-fifth of national income, implying low average labour productivity relative to the rest of the economy (Government of India, 2026, 2024a). The 2018-19 Situation Assessment Survey estimated average monthly income of an agricultural household at Rs. 10,218, with wages and livestock providing essential income alongside crop cultivation; it also documented indebtedness, unequal asset ownership, and major differences across land classes and states (Government of India, 2021). More than 86 per cent of operational holdings are small or marginal, limiting the ability of individual cultivators to obtain technology, finance, storage, or bargaining power at efficient scale (Government of India, 2019a).

This article asks three questions: First, why have improvements in aggregate production not translated uniformly into secure farm incomes and diversified rural livelihoods? Second, how effectively do India's principal agricultural and rural-development policies address the underlying constraints? Third, what feasible reforms can align productivity,

inclusion, employment, and ecological sustainability? The paper treats rural development as a multidimensional process involving income, resilience, public services, voice, equality, and expansion of non-farm opportunities, not merely growth in crop output (World Bank, 2007; IFAD, 2016).

The analysis is a critical narrative review. It triangulates national surveys, the Agricultural Census, Economic Surveys, ministry reports, NITI Aayog and RBI/NABARD publications, and research by Indian and international institutions. Policy performance is judged against five criteria: productivity, income stability, inclusion, environmental sustainability, and administrative feasibility. Because agriculture is primarily a state subject and agro-ecological conditions differ greatly, national averages are interpreted with caution. The objective is not to prescribe a single model but to identify principles and instruments that states and districts can adapt.

II. POLICY EVOLUTION AND ANALYTICAL FRAMEWORK

Indian agricultural policy has passed through overlapping phases. In the 1950s and early 1960s, land reform, community development, multipurpose irrigation, cooperatives, and institutional capacity were priorities. The Green Revolution subsequently combined publicly bred seeds, assured irrigation, fertiliser, credit, price support, procurement, and extension, initially concentrated in wheat and rice regions. This package raised yields and reduced famine risk but also generated spatial concentration, cereal bias, and resource-intensive production systems (Evenson et al., 2003; Pingali, 2012).

From the 1990s, trade liberalisation and faster non-agricultural growth changed relative prices and consumption. Demand shifted toward fruit, vegetables, milk, eggs, meat, fish, and processed foods. Policy diversified through horticulture missions, watershed programmes, rural roads, employment guarantees, self-help-group mobilisation, financial inclusion, crop insurance, direct income support, digital markets, and farmer producer organisations (FPOs). Recent initiatives include PM-KISAN, the Pradhan Mantri Fasal Bima Yojana (PMFBY), Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), Agriculture Infrastructure Fund, e-NAM, the Digital Agriculture Mission, and the programme to form 10,000 FPOs (Government of India, 2019b, 2025a, 2026).

Four relationships organise the analysis: First, higher land and water productivity can increase household surplus, local demand, and rural wages, but only if benefits are not absorbed by input costs or concentrated among large asset holders. Second, functioning value chains determine how much of the consumer price reaches producers and whether perishable diversification is viable. Third, social policy and risk protection affect households' capacity to invest rather than adopt low-return survival strategies. Fourth, structural transformation requires movement of labour toward more productive farm, allied, manufacturing, and service activities without producing distress migration. Thus agricultural policy, social protection, infrastructure, skills, and enterprise policy must be evaluated together (Timmer, 2009; Foster and Rosenzweig, 2011).

III. THE CONTEMPORARY RURAL ECONOMY

India's rural economy is heterogeneous. Irrigated north-western cereal systems coexist with eastern smallholder systems, central and peninsular rainfed regions, plantation economies, tribal forest landscapes, coastal fisheries, and rapidly commercialising peri-urban belts. State differences in infrastructure, markets, extension, land administration, women's participation, and local government capacity are as consequential as differences in climate.

The crop sector remains important, but growth is increasingly driven by allied activities. Livestock supplies more regular cash flow and is often accessible to land-poor households and women; fisheries and aquaculture have expanded rapidly; and horticulture offers high returns but high perishability and price risk (Birthal et al., 2014; Government of India, 2026). Rural households combine cultivation, livestock, wage labour, migration, and non-farm businesses. This diversification is not always a sign of prosperity: it can reflect successful accumulation or coping with inadequate farm income.

Public programmes shape this mixed economy. The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) provides a legal employment guarantee and can create water-conservation, land-development, and connectivity assets. The National Rural Livelihoods Mission (NRLM) organises women into self-help groups and federations, improving savings, credit access, and collective enterprise. The Pradhan Mantri Gram Sadak Yojana (PMGSY) improves all-weather road connectivity, which research associates with structural change and access to services, although local employment effects depend on complementary capabilities (Asher and Novosad, 2020;

Government of India, 2025b). Rural sanitation, housing, drinking water, electricity, broadband, health, and education programmes also influence agricultural productivity by reducing disease, unpaid care work, transaction costs, and vulnerability.

The central policy issue is therefore not a choice between "agriculture" and "rural development." Productive agriculture supports demand and raw materials for the rural non-farm economy; roads, electricity, digital connectivity, education, and health raise agricultural returns; and social protection enables risk-taking. Fragmented departmental delivery, however, often prevents these complementarities from being realised.

IV. MAJOR CHALLENGES

4.1 Small holdings, land fragmentation, and insecure tenancy

Declining average operational size raises the cost of mechanisation, irrigation, certification, storage, and direct marketing. Scale disadvantages are not inevitable: small farms can use labour and land intensively and achieve high yields, but they face high transaction costs and weak bargaining power. Fragmentation into scattered plots further reduces efficiency. Land leasing is widespread but frequently informal because restrictive or ambiguous state laws create fear of ownership claims. Tenants and sharecroppers may then be excluded from institutional credit, insurance, disaster compensation, input support, and procurement because eligibility is tied to recorded title (NITI Aayog, 2016; Haque, 2001).

Land records have improved through digitisation, yet textual records, cadastral maps, possession, and mutation are not consistently integrated. Women face a double constraint: they perform a large share of agricultural work but are less likely to hold land titles or be identified as cultivators. Consolidation through coercive acquisition is neither desirable nor necessary. The practical agenda is secure, time-bound leasing; updated interoperable records with due process; joint titles and inheritance enforcement; and voluntary aggregation of input purchase, machinery, production planning, and marketing through FPOs, cooperatives, and custom-hiring centres.

4.2 Productivity gaps, weak research diffusion, and regional inequality

Yield gaps remain large across crops and states. Indian yields for several cereals, pulses, maize, soybeans, and oilseeds remain below attainable or international benchmarks, while even leading states contain poorly performing districts (Government of India, 2026; FAO, 2024). Constraints include unreliable irrigation, poor seed replacement, imbalanced nutrients, pest and disease pressure, limited mechanisation suited to small plots, and weak last-mile extension. Public agricultural research has high social returns, but expenditure and staffing have not matched the needs of climate adaptation, biosecurity, nutrition, and diverse rainfed systems (Pal and Byerlee, 2006; Chand, 2022).

Extension is split among state departments, Krishi Vigyan Kendras, input dealers, private platforms, civil society, and mass media. Farmers often receive generic recommendations rather than locally tested advice. Commercial sellers may have incentives to encourage excess input use. Digital advisory services can widen access, but language, device ownership, data quality, and trust produce a digital divide. Effective extension must combine digital scale with accountable human intermediaries, demonstration plots, farmer-to-farmer learning, and feedback from field problems to researchers.

Regional inequality is reinforced by path dependence. Areas with assured irrigation, procurement, roads, and organised marketing attract investment, whereas rainfed, tribal, hill, and flood-prone regions confront multiple deficits. Uniform subsidies can widen rather than close these gaps. A district-level approach should fund the binding constraint—water harvesting in one district, drainage in another, animal health elsewhere, or cold chains near horticultural clusters—instead of replicating a standard asset list.

4.3 Water stress, soil degradation, and distorted incentives

Agriculture is India's dominant user of freshwater. Free or underpriced electricity, subsidised pumps, and assured procurement of water-intensive rice and wheat have encouraged groundwater extraction in ecologically stressed regions. Canal systems often suffer from poor maintenance, inequitable tail-end supply, and weak water-user institutions. At the same time, many rainfed farmers lack protective irrigation. Climate change will intensify competition and increase the value of reliable water accounting (World Bank, 2010; Central Ground Water Board, 2024).

Fertiliser policy has supported production, but the low controlled price of urea relative to other nutrients contributes to imbalanced nitrogen use. Blanket recommendations overlook soil variation, while declining organic matter, salinity, erosion, residue burning, and micronutrient deficiencies reduce long-term productivity. Electricity and fertiliser subsidies are politically salient income support, yet their benefits are often proportional to input use and land area. They can crowd out investment in research, extension, irrigation maintenance, and market infrastructure (Gulati and Banerjee, 2018; OECD and ICRIER, 2018).

Reform must protect smallholder income while changing marginal incentives. Options include direct benefit transfers independent of the quantity of electricity or fertiliser consumed; metered feeders combined with a free lifeline allocation; payments for verified water saving; solar-pump programmes designed to avoid unlimited pumping; expansion of micro-irrigation where agronomically suitable; and procurement or deficiency payments that support less water-intensive crops. Soil testing is useful only if matched with reliable input supply and extension. Watershed treatment, aquifer management, tank restoration, drainage, agroforestry, crop residue markets, and balanced nutrient management should be financed as core productive infrastructure.

4.4 Climate change, disasters, and production risk

Heat stress, erratic monsoons, drought, flood, cyclones, and new pest patterns threaten yields and rural assets. Climate exposure interacts with debt, tenancy, gender, caste, and remoteness: the same weather shock creates larger welfare loss for households with limited savings, irrigation, insurance, or alternative earnings. Climate change also increases covariate risk, making traditional local risk-sharing less effective (IPCC, 2022; Mall et al., 2006).

PMFBY has expanded the architecture of subsidised crop insurance, but delayed yield estimation, basis risk, unclear loss assessment, farmer awareness, state premium arrears, and uneven enrolment have weakened trust. Insurance alone cannot compensate for systematically unsuitable production. Risk management should layer prevention, preparedness, insurance, and relief. Weather and pest surveillance, heat- and flood-tolerant varieties, altered sowing windows, water storage, drainage, resilient livestock shelters, fodder banks, and local contingency plans reduce losses. Insurance should use transparent enrolment records, remote sensing combined with ground verification, public claim dashboards, and strict settlement timelines. Catastrophic layers may be publicly reinsured, while frequent manageable losses are better reduced through agronomy and infrastructure (CAG, 2017; Government of India, 2025a).

4.5 Prices, markets, and post-harvest losses

Minimum support prices (MSPs) provide a reference and procurement offers effective support to participating farmers, but physical procurement is concentrated in certain crops and states. Many farmers sell immediately after harvest because of debt, storage constraints, small surpluses, or transport costs. For perishables, local gluts can coexist with high retail prices. Multiple intermediaries are not intrinsically harmful—aggregation, grading, finance, transport, and risk-bearing are real services—but weak competition and asymmetric information reduce the producer's share (Chand, 2017; Negi et al., 2021).

The Agricultural Produce Market Committee system has created regulated marketplaces but varies in competitiveness and governance. e-NAM improves price discovery and administrative digitisation, yet electronic listing alone cannot create a national market without assaying, interoperable licences, logistics, dispute resolution, and actual inter-market trade. Sudden export restrictions, stock limits, or tariff changes may reduce consumer-price spikes in the short run but create policy risk that discourages investment and diversification. Food-inflation management should use predictable trigger rules, calibrated buffer stocks, and targeted consumer transfers where possible rather than repeatedly compressing farm-gate prices.

Warehouses, cold chains, packhouses, reefer transport, primary processing, and quality laboratories remain unevenly distributed. Infrastructure succeeds when linked to throughput, buyers, energy reliability, and management capacity; an unused cold store is not a value chain. Negotiable warehouse receipts can reduce distress sales if smallholders can aggregate lots and obtain affordable finance. Public investment should prioritise open-access common facilities and last-mile roads, while competitive private investment can operate processing and logistics under transparent standards.

4.6 Credit, indebtedness, and incomplete financial inclusion

Institutional agricultural credit has expanded through commercial banks, cooperatives, regional rural banks, and Kisan Credit Cards, but access remains unequal. Recorded landholders and larger borrowers are easier to serve; tenants, women, oral lessees, livestock keepers, fishers, and remote households may rely on informal lenders. Targets based on aggregate credit volumes can favour repeated lending in already banked regions or loans indirectly associated with

agriculture. Smallholders also require appropriately timed working capital, investment credit, consumption smoothing, and emergency liquidity—products that a single crop loan cannot supply (Reserve Bank of India, 2024; NABARD, 2018).

Digitisation and alternative data can reduce transaction costs, but automated scoring may reproduce exclusion and raises questions about consent, privacy, correction, and commercial use of farm data. Joint-liability groups, SHG-bank linkage, FPO-based lending, movable collateral, warehouse receipts, and cash-flow lending can complement land collateral. Financial inclusion must be measured by appropriate use and borrower welfare, not account opening alone. Debt-relief announcements may be necessary after exceptional systemic shocks, but recurrent blanket waivers weaken credit culture and often exclude informal borrowers; durable relief requires restructuring protocols, disaster-contingent products, and viable farm returns.

4.7 Gender, caste, tribe, and spatial exclusion

Rural policy is not distribution-neutral. Women contribute substantially to sowing, weeding, harvesting, livestock care, post-harvest work, and household nutrition, particularly as men migrate. Yet limited land ownership restricts their recognition as farmers and their access to credit, extension, machinery, insurance, and producer organisations. Tools and training are often designed around men, while unpaid care and mobility constraints reduce participation. Scheduled Castes, Scheduled Tribes, landless labourers, and remote communities face distinct disadvantages in asset ownership, market access, voice, and public-service quality (Agarwal, 1994; FAO, 2011).

Inclusion requires more than quotas on membership lists. Joint land titles, tenancy certificates, individual bank access, women extension agents, childcare at training and worksites, appropriately designed equipment, leadership positions, and sex-disaggregated outcome data are necessary. Tribal development must recognise community forest rights, minor forest produce value chains, customary institutions, and ecological knowledge. MGNREGA remains especially important for landless households because many agricultural subsidies accrue through land or input ownership. Assets on the land of disadvantaged households, common-land regeneration, timely wage payment, and strong social audits can link protection with productivity.

4.8 Underemployment and the weak rural non-farm transition

Raising farm productivity will release some labour and increase demand for services, but rural workers need credible alternatives. Manufacturing has not absorbed labour at the required scale, while rural non-farm work is often informal, low-paid, and insecure. Youth aspirations increasingly extend beyond cultivation, yet schooling quality, technical skills, transport, digital access, and enterprise finance remain uneven. Migration can diversify income, but distress migration exposes workers to unsafe housing, weak portability of benefits, and labour-market shocks (Lanjouw and Murgai, 2009; Himanshu et al., 2011).

A job-rich strategy should develop agro-processing, repair services, logistics, renewable energy, construction, tourism, care services, and small manufacturing around connected rural towns. Cluster policy must start from market demand and local capabilities rather than buildings alone. Apprenticeships, recognition of prior learning, common service centres, reliable power, and simple compliance for microenterprises are essential. Portable social protection and better rental housing can make migration safer, while investments in village services allow households to choose mobility rather than be compelled by crisis.

V. ASSESSMENT OF MAJOR POLICY INSTRUMENTS

Table 1 summarises the principal strengths and limitations of current instruments. The pattern is consistent: most schemes address a real constraint, but effectiveness depends on beneficiary identification, complementary institutions, and state implementation. Direct income support is administratively simple but modest and may exclude tenants. MSP procurement stabilises selected markets but reinforces regional and crop concentration. Insurance transfers risk but cannot repair poor agronomy or contested land records. FPOs can create scale economies, but registration without professional management, working capital, and buyers produces fragile organisations.

Table 1: Selected policy instruments: contribution, limitation, and reform direction

Instrument	Main contribution	Recurring limitation	Priority reform
MSP and procurement	Price floor, food security stocks	Crop/state concentration; fiscal and ecological costs	Diversify procurement; transparent deficiency payments; predictable trade rules
PM-KISAN	Simple, regular income support	Modest amount; title-based exclusions	Periodic updating; inclusion pathway for verified tenants and women cultivators
PMFBY	Subsidised formal risk transfer	Basis risk, delays, low trust	Open claim data, remote-sensing plus field audit, time-bound settlement
PMKSY/micro-irrigation	Protective irrigation and water efficiency	Patchy maintenance; rebound pumping risk	Aquifer budgets, crop alignment, community institutions
Input and power subsidies	Lower private production cost	Regressive incidence and resource overuse	Gradual transfer-based reform with smallholder protection
e-NAM/APMC reform	Better information and potential competition	Limited assaying, logistics, and inter-market trade	Interoperability, quality standards, dispute settlement
FPO programme	Aggregation and bargaining power	Weak governance, capital, and professional staffing	Patient equity, working capital, audited governance, buyer linkage
MGNREGA	Income floor and local assets	Payment delay and variable asset quality	Timely payment, watershed convergence, social audit
NRLM/SHGs	Women's finance and collective agency	Uneven enterprise graduation	Producer collectives, market linkage, childcare and skills
PMGSY and digital infrastructure	Lower transaction costs and service access	Benefits limited by weak complementary skills/markets	Connect roads and broadband to clusters, schools, health and logistics

Policy fragmentation is also fiscal fragmentation. Ministries and state departments separately finance water, crops, livestock, rural works, roads, skills, food processing, and livelihoods. Convergence is frequently announced but rarely supported by shared maps, budgets, timelines, or accountability. District plans should identify a limited number of measurable outcomes—for example, reduced groundwater extraction per unit of value, higher producer share in a horticulture cluster, lower livestock mortality, or increased women-controlled income—and then assemble relevant programmes around them.

Federalism creates both experimentation and inequality. States have pioneered digital farmer registries, decentralised procurement, natural farming, dairy cooperatives, tank restoration, land surveys, and market platforms. Policy evaluation should compare credible outcomes, not simply expenditure or enrolment. Successful models require adaptation: a dairy cooperative depends on veterinary services, chilling, governance, and dense procurement routes; it cannot be reproduced through registration alone. The Union government can finance standards, interoperable public infrastructure, research, equalisation grants, and independent evaluation, while states and local governments tailor delivery.

VI. AN INTEGRATED PROBLEM-SOLUTION AGENDA

6.1 Rebalance expenditure from private inputs toward public goods

The composition of support matters as much as its total size. A gradual, politically negotiated shift should protect small-farmer income while moving marginal public expenditure from fertiliser, electricity, and crop-specific price incentives toward research, extension, irrigation maintenance, rural roads, storage, animal health, and climate adaptation. Reform should begin with measurement and pilots, not abrupt withdrawal. Each state can publish an annual agricultural-support statement showing subsidies, capital investment, distribution across farm sizes and regions, and environmental effects. Savings should be visibly recycled into farmer accounts and local public goods.

Outcome-based incentives can reward states or irrigation commands for groundwater stabilisation, diversified procurement, balanced fertiliser use, and maintenance of assets. However, indicators must be independently verified and avoid punishing drought-prone regions for climatic conditions. A combination of unconditional equalisation funding and performance grants is preferable to rankings alone.

6.2 Build a smallholder scale-neutral service architecture

Small farms require access to scale, not necessarily transfer of ownership. FPOs, cooperatives, SHGs, and joint-liability groups can aggregate demand for seed, fertiliser, machinery, technical advice, finance, grading, and sales. Public support should be conditional on transparent membership, audited accounts, member transactions, women and tenant participation, and a viable business plan. Patient equity and credit guarantees are needed during early years, but permanent dependence on grants should be avoided (Trebbin, 2014; NABARD, 2020).

Custom-hiring centres should offer small, locally appropriate machinery and trained operators rather than only capital-intensive equipment. Village-level service entrepreneurs can provide soil sampling, drone or sensor services where cost-effective, bookkeeping, logistics, and repair. Open digital standards should allow farmers to switch providers and retain control over data. Public platforms should function as infrastructure identity with safeguards, consent, registries, weather, price, and scheme information not as mandatory channels that exclude offline users.

6.3 Adopt agro-ecological, water-budgeted district plans

Planning should begin with soils, aquifers, rainfall, temperature risk, farm structure, nutrition needs, and market access. Each water-stressed block needs an annually updated water budget linking extraction, recharge, crop choices, and energy supply. Community groundwater institutions are difficult but essential because individual efficiency devices can increase total extraction when farmers expand irrigated area. Micro-irrigation must therefore be combined with extraction limits or incentives and crop planning.

Diversification should be demand-led and risk-managed. Replacing rice or wheat without assured buyers, agronomy, processing, and consumer demand transfers risk to farmers. States can use decentralised procurement for pulses and millets, school meals and nutrition programmes, transition payments, and long-term contracts with safeguards. Agroforestry, integrated crop-livestock systems, conservation agriculture, biological pest management, and improved manure management can raise resilience when scientifically matched to local contexts. Competing claims for "natural," "organic," and conventional systems should be tested through independent multi-year comparisons of yields, income, labour, soil, water, and risk rather than ideological labels.

6.4 Create competitive, inclusive value chains and stable rules

Investment should follow cluster diagnostics. For each promising product, planners should map volumes, seasonality, quality specifications, existing traders, price spreads, power supply, transport, finance, and demand. Missing public goods—an approach road, collection centre, laboratory, market information protocol, or veterinary service—can then be funded before subsidising large processing assets. Open access and competitive procurement reduce the risk that public infrastructure becomes a private enclave.

Contracts can provide inputs and market assurance but require plain-language agreements, transparent quality testing, prompt payment, and low-cost dispute resolution. FPOs can negotiate on behalf of members, although they should not be forced into exclusive arrangements. Competition authorities and market regulators need capacity to monitor buyer concentration and unfair practices. Export and stock policies should be rule-based, with published triggers and review dates, so that food-price stabilisation does not create arbitrary losses. Consumer protection is better targeted through the food distribution system or cash support than through persistent suppression of producer incentives.

6.5 Modernise resilience and social protection

Every farm household requires a layered resilience package: preventive extension and infrastructure; accessible savings and credit; insurance for insurable losses; and rapid public relief for catastrophes. A unified claim interface can prevent households from navigating separate crop, livestock, life, health, and disaster systems. Coverage should follow the cultivator or livestock keeper, not only the titleholder. Panchayat-level public dashboards can report notified crops, enrolment, premium, yield estimates, claims, and settlement time while protecting personal data.

MGNREGA should remain demand-driven and be strengthened as a climate adaptation programme. Scientifically planned works can restore watersheds, farm ponds, drainage, pastures, and common lands, but ecological design, maintenance responsibility, and social audit are crucial. Advance contingency plans should automatically expand employment and relax ration portability barriers after droughts or floods. Health insurance, pensions, disability support, and portable food entitlements reduce the need to sell productive assets during shocks.

6.6 Put women, tenants, and labourers at the centre

All farm schemes should state whether eligibility is based on ownership, cultivation, residence, labour, or enterprise and provide a documented alternative for legitimate non-titleholders. States can issue renewable cultivator or crop-cultivator certificates that preserve owners' rights while enabling tenants to obtain seasonal benefits. Land-record services should support joint titles, inheritance mutation, and accessible grievance redress.

Budgets should track benefits controlled by women, not merely women listed as members. Extension schedules must fit women's time constraints; childcare, safe transport, and women trainers matter. Livestock, seed production, processing, and collective marketing programmes should aim to move women from unpaid labour to ownership and decision-making. For landless workers, timely MGNREGA wages, skills, labour protections, and access to commons are more relevant than crop subsidies. Tribal plans should be based on consent, forest rights, local biodiversity, and value addition close to the producer.

6.7 Connect agriculture to a rural jobs strategy

Rural development policy should plan around networks of villages and nearby towns. Reliable roads, buses, electricity, broadband, warehousing, schools, health facilities, and financial services allow workers and firms to access larger markets without permanent relocation. District skill plans should be based on actual employer demand in food processing, dairy, fisheries, equipment repair, solar installation, construction, logistics, tourism, healthcare, and digital services. Training providers should be paid partly for sustained placement or viable self-employment, with safeguards against gaming.

Micro and small enterprises need working capital, simple taxation and licensing, quality certification, e-commerce logistics, and common facilities. Public procurement can reserve transparent opportunities for SHGs and local enterprises without protecting poor quality indefinitely. Secondary towns can host cold storage, laboratories, hospitals, colleges, and business services that are unviable in every village. This territorial approach turns agricultural surplus into local multipliers and makes movement out of farming gradual and voluntary.

VII. IMPLEMENTATION ROADMAP AND MONITORING

Reform should be sequenced. In the first two years, governments should improve foundations: reconcile land and cultivator records with appeal mechanisms; publish scheme-level inclusion and payment data; map water, soils, infrastructure, and value chains; clear delayed insurance and MGNREGA payments; and select district pilots through transparent criteria. Existing funds can be converged around a small number of district outcomes without waiting for new flagship schemes.

Over years three to five, states should scale secure leasing frameworks, cultivator eligibility, professional FPO support, aquifer-based water incentives, diversified procurement, open-access post-harvest infrastructure, and integrated risk platforms. Input-subsidy pilots should guarantee that small farmers are no worse off during transition. Independent institutions should evaluate pilots using matched comparisons or phased roll-outs where feasible, reporting distributional and environmental effects as well as average income.

Over five to ten years, fiscal support should progressively favour public goods, climate resilience, human capital, and portable social protection. Rural secondary towns and enterprise clusters should be integrated with transport and land-use planning. Agricultural universities should be rewarded for locally adopted innovations and feedback from

extension. Panchayats and producer institutions need predictable funds, technical staff, and enforceable transparency rather than responsibilities without capacity.

Table 2 proposes a concise scorecard. Household income is essential but volatile and difficult to measure annually, so it should be paired with leading and distributional indicators. Data should be disaggregated by sex, social group, tenancy, holding size, and district. Administrative dashboards must be periodically checked against independent household and enterprise surveys; otherwise rapid but inaccurate data can displace slower truth.

Table 2: Suggested outcome scorecard for district agricultural and rural-development plans

Goal	Core indicators	Distributional/environmental check
Viable livelihoods	Real net household income; days of employment; income share from allied/non-farm sources	Median and bottom two quintiles; women-controlled income
Productivity	Value added per hectare, worker, and cubic metre of water	Rainfed versus irrigated; small versus large holdings
Market power	Producer share of consumer price; payment time; share graded/stored/processed	Tenant, women, tribal, and remote-area participation
Risk reduction	Yield/income variability; claim settlement time; distress asset sales	Coverage of non-titleholders and landless households
Natural resources	Groundwater balance; soil organic carbon; nutrient balance; erosion/common-land condition	Absolute resource use, not efficiency alone
Capabilities	Learning, health access, digital use, skill placement, enterprise survival	Caste, tribe, sex, disability, and location gaps
Governance	Payment timeliness; grievance closure; audit findings; asset functionality	Independent verification and public social audit

Three governance principles are crucial: First, transparency should be designed for action: beneficiaries need understandable reasons for rejection, a human appeal channel, and deadlines. Second, evaluation must permit policy exit: schemes that do not create functioning assets or measurable welfare gains should be redesigned or closed. Third, participation must include workers, tenants, women, tribal communities, traders, and small enterprises, not only titled farmers or large organised interests. These principles reduce exclusion while improving the information available to administrators.

VIII. DISCUSSION

The analysis reveals four deeper tensions. The first is between food-price stability and producer incentives. India must protect poor consumers, but unpredictable market restrictions can tax farmers implicitly. A modern food-security strategy should combine efficient buffer stocks, a nutrition-sensitive public distribution system, and targeted transfers with stable production and trade rules.

The second tension is between universal political entitlements and targeted ecological reform. Power, fertiliser, water, and procurement regimes create legitimate expectations. Abrupt reform would impose concentrated losses and provoke resistance. A credible transition requires compensation, sequencing, farmer participation, and visible reinvestment. The question is not whether the state should support agriculture, but whether each rupee raises resilient income and public value.

The third is between digital efficiency and substantive inclusion. Digital payments and registries can reduce leakage and speed delivery, yet database errors, weak connectivity, and title-based identification can exclude precisely those with the least power. "Digital first" must never mean digital only. Data minimisation, informed consent, interoperability, cybersecurity, correction rights, and offline assistance are components of agricultural policy, not peripheral technical matters.

The fourth is between farm support and structural transformation. Keeping ever more workers in low-productivity cultivation is not rural development, but forcing people out through unviable farming is not transformation. Policy should raise the productivity and bargaining power of those who remain, while creating human capabilities and enterprises that make occupational mobility attractive. This dual strategy is particularly important for rural youth.

No uniform national blueprint can reconcile these tensions. Punjab and Haryana require a managed transition away from groundwater-intensive cereal incentives; eastern India may gain from reliable water control, drainage, aggregation, and market access; dryland regions require water budgeting, hardy crops, livestock, and income diversification; hill and tribal areas need niche value chains, forest rights, and low-volume logistics; coastal regions require fisheries governance and climate-resilient infrastructure. National policy should set rights, standards, finance, and knowledge systems, while accountable state and local institutions adapt the package.

IX. CONCLUSION

India's agricultural record demonstrates the power of coordinated public policy, but the next transformation is more complex than the Green Revolution. The objective is no longer simply to maximise a few staple crops. It is to secure nutritious food, viable producer incomes, sustainable water and soils, resilience to climate shocks, and dignified rural employment in a highly diverse federal system.

The most important reform is integration. Secure cultivation rights, smallholder aggregation, research and accountable extension, water-budgeted diversification, competitive value chains, layered risk protection, gender-responsive institutions, and rural enterprise development reinforce one another. Implemented separately, each has limited reach. Implemented through place-based district plans with shared outcomes, they can convert multiple schemes into a coherent development strategy.

Policy should therefore move from counting expenditure, beneficiaries, portals, and assets toward measuring real income, payment timeliness, producer price shares, resource balances, functioning infrastructure, inclusion, and occupational mobility. Support must shift gradually from input intensity toward public goods and direct, equitable protection. Farmers should be treated not as passive beneficiaries but as producers, entrepreneurs, resource managers, workers, and citizens with enforceable rights. India's rural future will depend on whether agricultural policy enables this broader agency while building productive opportunities both on and beyond the farm.

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