



Nationalisation of Agriculture: A Way Forward to Sustainability

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Abstract:

The agriculture sector has made India a surplus country since independence in terms of yield that is sufficient enough to address the growing demand of its population over the period of time. But it has originated the major concerns in terms of ecology and climate change. Indian Agriculture has predominantly moved away from the benefits of the Green Revolution and culminated into the less crop diversity and groundwater depletion. The lack of technological advancement in the major parts of the country has been mitigated by the establishment of the Farmer Producer Organisations throughout pan India and it is required to penetrate the sustainable agricultural practices using this network. The change in social dynamics of India has underlined the unwillingness of the future generation to work in the agricultural sector due to the rise in gig-economy. This phenomenon has manufactured the shortage of the skilled agricultural labour and rising the cost of agriculture in the form of rising daily wages.

Despite the pragmatic policy response of the government in the last two decades like introducing the farm laws and nudging the farmers community towards commercialisation and more profitability has derailed due to the lack of inclusive approach at the policy level. The climate change arrives at pace paving its way for the uncertainty around the declining agricultural yield and employability crisis. In order to tackle the pressing issues of agriculture, this paper offers the policy recommendations in terms of Nationalisation of Agriculture can be a way forward for the sustainable agriculture for the Viksit Bharat 2047.

Introduction:

The Indian agriculture is surrounded by the five key challenges. The groundwater depletion occurred in the two third states in India, predominantly in the state of Punjab and Haryana to cultivate the cash crops intensified. Almost 63 percent of the districts are facing the lower water tables. The districts having a water table below 8 meters are exposed to the severe poverty rates are higher from 8 to 9 percentage. This phenomenon culminates into the less crop diversification observed in the country with the simple reason of incentives given in-terms of Minimum Support Price and profit margins of cash crops. The crop diversity was affected by the policy of green revolution and resulted in the import of agricultural products. For example, the edible oil imports in India grew from 12 million tons in year 2018-19 from 16.5 million tons in year 2022-23. The cost of import has risen from 66 thousand crores to 1.5 lakh crores per year from 2018 to 2023. This has been the persistent reason for the food inflation rising due to the cost of edible oil in the domestic consumption. The establishment of Farmer Producer Organisation collectively gathered the small, marginal and rich farmers together for the greater good. An advantage of having an access to the technological equipment and tools for harvesting can easily get transferred from the rich to marginalised farmers. It helped to reduce the cultivation cost of the marginalised farmers and benefiting them to achieve the collective goal of making their business more profitable. Despite the penetration of technology, rural India is still deprived of the

mindset required to make use of it for the commercialisation of agriculture. The rising concerns over a climate change making the agricultural yield more vulnerable and also impacting the working hours and remuneration of the agricultural labourers.

Sustainable business models in India are increasingly focusing on integrating environmental and social considerations into their core operations, driven by a growing awareness of climate change and social equity. Many enterprises are adopting innovative practices such as circular economy principles, where waste is minimized and resources are reused, fostering resilience and reducing environmental impact. Additionally, companies are leveraging technology to create efficiencies, enhance transparency, and engage local communities, thereby creating a holistic approach that benefits both the economy and society while ensuring long-term viability (Rathod et al., 2024).

Sustainable agricultural practices in India, such as organic farming, integrated pest management, and crop rotation, are essential for enhancing soil health and increasing biodiversity, which in turn contributes to a more resilient agricultural system. These practices not only align with environmental conservation but also improve the livelihoods of farmers by reducing input costs and increasing yields, ultimately driving economic growth in rural areas. As India seeks to balance food security with ecological sustainability, investing in and promoting these practices can lead to a more prosperous agricultural sector and a strengthened economy (Wavare et al., 2024).

By considering all the factors and corresponding agricultural policies of India, especially after the revocation of the farm laws there is a need of fundamental changes in policy framework. The idea of nationalisation can become a viable solution to the existing challenges of the Indian agriculture in order to develop sustainable agriculture ahead of Viksit Bharat 2047.

Historical Context of Agricultural Governance in India:

India's agriculture policy has evolved in sequential phases after independence. The initial phase (1947-1965) involved land reforms and institution building for the correction of food security problems. The Green Revolution era (1965-1980) saw extensive state intervention through input subsidies, price incentives, and extension. Economic liberalization (1990s-2000s) was characterized by the eventual shift to market-oriented practices with the retention of core state support systems.

India's farm policy has shifted between government control and market deregulation over history, ultimately unable to settle on a satisfactory balance between both policies. It has been observed that the experience of half-hearted liberalization created a situation of "neither-here-nor-there," where neither government intervention nor market forces were effective and hence continued to perpetuate long-standing structural inefficiencies.

International Experiences of Nationalization in Agricultural Sectors:

Nationalization of agriculture has occurred in different forms across the globe with varying results. The experience of Cuba's agricultural nationalization, observing initial productivity decline followed by stabilization through adaptive policy adjustments. Vietnam's strategy was state ownership of land with household-based production systems, which led to spectacular productivity growth and export growth.

Conversely, Zimbabwe's nationalization of agriculture through land redistribution without proper institutional support resulted in production failures and food shortages. These contrasting experiences indicate that nationalization outcomes are highly dependent on implementation strategies, institutional capacity, and complementary policies.

Water Resource Management under State Control:

State-led water management holds the key to addressing the groundwater problem in India. The strategy of viewing groundwater as a community resource and not private property is crucial to guaranteeing sustainable management. It demonstrates how state-regulated community-based water governance has effectively managed groundwater resources in some parts of Gujarat and Maharashtra.

It is a model in which state governments control water extraction through permits and volumetric pricing with technical assistance for optimal use of water. This regulated model resolves the "tragedy of the commons" issue that is built into the existing groundwater management system in India.

Strengthening Crop Diversification through Policy Initiatives:

Policy-led crop diversification is a key element of farm sustainability. Chand (2021) examines how South Korea diversified farm production using the spread of government procurement assurances on individual crops to ensure balanced incentives to farmers. The states with state-sponsored crop diversification programs have 25-30% higher climate variability resilience than monocrop states.

Diversification strategies have to reconcile food security requirements with sustainability requirements. This suggests a zonal strategy of crop planning based on agro-climatic conditions, state procurement guarantees tied to such plans instead of uniform national policies.

Technology Adoption under Nationalized Systems:

Technology diffusion is still an ongoing issue across agricultural systems globally. The extent to which China's state-driven agricultural extension services delivered 80% higher technology uptake over market-led systems. Determinants of success were subsidized access to technology, extensive demonstration schemes, and financial incentives to adopt. Agarwal (2018) has noted that collective cooperative and state-sponsored technology adoption strategies were extremely successful among marginal and small farmers of Southeast Asia. This observation suggests that nationalization can play a part in accelerating the adoption of technology through institutionalized support.

Conceptual Framework: Conceptualizing Agricultural Nationalization for India:

In the Indian context, agricultural nationalization will not involve total state control over means of production but selective state intervention in areas of strategic importance in a mixed economy framework. In this study, a multi-tiered nationalization plan with well-defined state roles at various levels of the agricultural value chain is proposed:

Tier 1: Resource Governance:

- A wide-ranging governmental regulation of vital resources like water, land use, and biodiversity.
- State regulatory systems-based community-based resource management
- Long-term sustainability planning rather than short-term production benefits

Tier 2: Strategic Market Engagement:

- More effective government procurement systems that exceed present MSP capacity.
- Counter-cyclical market interventions for price stability
- Buffer stock strategic management for price stability and food security

Tier 3: Knowledge and Technology Infrastructure:

- Government-funded research and development in sustainability and climate resilience
- Comprehensive extension services involving compulsory technological training.
- Subsidized access to major technologies with environmental concerns

Tier 4: Value Addition and Processing:

- Strategic public sector processing industries (pulses, oilseeds)
- Value addition joint ventures with the state by FPOs
- Regulated social responsibility private sector involvement

This conceptual framework maintains farmers' independence in production choices, but generates an organized setting conducive to sustainability, equity, and efficiency.

Methodology:

This research employs a mixed-methods approach with quantitative data analysis complemented by qualitative assessments of policy structures and stakeholders' perceptions. The primary data collection included:

1. Systematic interview of 200 farmers from eight states (Punjab, Haryana, Uttar Pradesh, Bihar, Maharashtra, Karnataka, Tamil Nadu, and Odisha) stratified by land holding size and cropping pattern
2. Semi-structured interviews of 30 agricultural policy analysts consisting of academics, government officials, and civil society actors
3. Focus group discussions among 15 FPOs from various agro-climatic zones
4. Delphi method consultation with 25 progressive nationalization approach specialists

Secondary data sources included:

1. Ministry of Agriculture and Farmers Welfare agricultural statistics (2018-2023)
2. Central Ground Water Board groundwater assessment reports (2020-2023)
3. Directorate General of Foreign Trade import-export data (2018-2023)
4. Climate vulnerability indices from the Indian Meteorological Department (2020-2023)
5. NITI Aayog evaluation reports and agricultural policy reports (2021-2023)

A comparative case study compared the histories of Vietnam, China, Cuba, and Ethiopia's agricultural nationalization to identify successful aspects and potential issues relevant to the Indian scenario. Policy simulations by system dynamics modelling also considered the potential impact of alternative nationalization approaches on significant indicators like the level of production, incomes for farmers, sustainability of resources, and fiscal requirements.

Statistical analysis utilized inferential and descriptive statistical techniques while maintaining vigilance regarding regional heterogeneity and differential effects among groups of farmers. Grounded theory techniques were used on qualitative data to find concepts and patterns in the process of emergence.

Analysis and Findings:**Current State Assessment: Failure of Current Strategies:**

Our examination reveals inherent limitations to state-driven as well as market-driven approaches for Indian agriculture. The current paradigm depicts:

1. **Misallocation of Resources:** In the face of massive public spending on irrigation infrastructure (4.5 lakh crores between 2015-2023), groundwater abstraction continues unchecked in 63% of districts. Evidence from surveys indicate that water-consumptive crops receive 2.8 times more state incentives through various mediums than water-saving crops.
2. **Unbalanced Growth:** The advantage of agricultural policy disproportionately accrues to bigger farmers. Our survey evidence indicates that marginal and small farmers (with farms of

less than 2 hectares) get a paltry 24% of overall policy benefits although they represent 86% of the farm group.

3. **Ecological Degradation:** Current incentive structures promote short-term production at the cost of long-term sustainability. Analysis of soil health data from survey locations shows declining organic carbon content (average 0.3% decline over five years) and increasing salinity in intensively cultivated locations.
4. **Technology Gaps:** In spite of 12,500 crores spent on spreading agricultural technology between 2018-2023, adoption levels are less than 30% for climate-resilient technologies by small and marginal farmers.
5. **Market Failures:** Instability of prices is a persistent issue that has 38% average price volatilities for non-MSP crops and 12% average price volatilities for MSP-covered crops. Instability impacts disproportionately the small farmers who lack good market links and storage facilities.

The results show that both the existing degree of government intervention and market forces are insufficient in solving the core issues confronting Indian agriculture.

Stakeholder Views of Nationalization:

Stakeholder consultations revealed different perspectives on agricultural nationalization:

1. **Farmer Attitudes:** Marginal and small farmers (76% of the sample) favoured more state intervention in procurement, price stabilization, and resource management. Large farmers (holdings >4 hectares) were less ambivalent, and 68% opted for market-based options with less state intervention.
2. **Expert Consensus:** Consensus was achieved by the Delphi consultation exercise which concluded that focused nationalization in key sectors (water management, oilseed processing, and technology transfer) would be more desirable than complete nationalization or pure market approaches.
3. **FPO Insights:** FPO leaders stressed the complementary role that state institutions and producer organizations could play. 82% were favouring a hybrid model where state agencies deliver policy and infrastructure support and FPOs conduct local implementation and market linkages.
4. **Regional Variation:** Nationalization was preferred with significant regional variation, with 83% preference in rainfed and resource-scarce areas versus 42% in well-irrigated, commercially advanced farm areas. These results indicate that a prudent policy of nationalization based on regional contexts and farmer segments would be more appealing to stakeholders than universal one-size-fits-all national policies.

Nationalization Model:

A Tiered Implementation Approach After careful analysis, we suggest a gradual nationalization model consisting of four distinct phases:

Phase 1: Resource Governance Reorganization (1-3 years):

Create a National Water Resources Authority with the authority to regulate groundwater extraction

1. Implement zonal water budgeting supported by community monitoring systems
2. Introduce a tiered water pricing structure with exemptions for small farmers and essential food crops
3. Develop digital water accounting systems that enable real-time monitoring

Phase 2: Strategic Market Intervention Enhancement (2-5 years):

Broaden MSP coverage to include nutritious crops like millets and pulses, as well as water-efficient varieties

1. Establish a National Agricultural Market Corporation to connect regional markets through digital platforms
2. Create counter-cyclical price stabilization mechanisms for commodities not covered by MSP
3. Develop strategic storage facilities with participation from Farmer Producer Organizations (FPOs)

Phase 3: Knowledge and Technology Democratization (3-7 years):

Launch Agricultural Technology Missions aimed at promoting climate-resilient farming practices

1. Set up district-level technology demonstration centers that include mandatory training programs for farmers
2. Implement technology subsidy initiatives that require ecological performance standards
3. Create integrated knowledge platforms that merge traditional practices with scientific advancements

Phase 4: Value Addition Infrastructure Development (5-10 years):

Establish public-sector processing units for key commodities such as oilseeds and pulses- Foster joint ventures between state agencies and FPOs to enhance value addition efforts

1. Regulate private sector participation with mandates for social responsibility
2. Develop infrastructure to promote exports of value-added agricultural products

This phased strategy allows for flexibility based on implementation experiences, stakeholder input, and evolving agricultural conditions.

Economic Impact Assessment:

Economic modelling of the proposed nationalization approach projects significant positive impacts:

1. **Production Impacts:** Simulations indicate a potential 18-22% increase in overall agricultural productivity through improved resource allocation and technology adoption, with particular gains in currently underdeveloped regions.
2. **Income Distribution:** The proposed model projects a 35% increase in income for small and marginal farmers compared to 12% for large farmers, reducing income inequality within the agricultural sector.
3. **Import Substitution:** Progressive nationalization of oilseed production and processing could reduce edible oil imports by 45-50% within 7-10 years, saving approximately 75,000 crores annually in foreign exchange.
4. **Fiscal Implications:** The implementation costs are estimated at 2.8 lakh crores over ten years, with projected returns of 7.2 lakh crores through increased production, import substitution, and improved resource efficiency.
5. **Employment Generation:** The nationalization approach is projected to create 15 million additional agricultural and agro-processing jobs, particularly in rural areas with limited alternative employment opportunities.

These projections suggest that strategic nationalization could deliver significant economic benefits while addressing the structural challenges in Indian agriculture.

Pathways to Implementation:

Legal and Constitutional Framework:

Implementing agricultural nationalization requires careful navigation of India's constitutional framework. Article 246 and the Seventh Schedule place agriculture primarily under

state jurisdiction, necessitating Centre-State cooperation for effective implementation. Our analysis suggests three potential pathways:

1. **Concurrent Framework Approach:** Develop model legislation at the central level with state-level adaptation and implementation, similar to the land acquisition framework.
2. **Financial Incentive Mechanism:** Utilize centrally sponsored schemes with substantial financial incentives for states adopting key nationalization components.
3. **Constitutional Amendment Route:** For critical elements (particularly water governance), consider constitutional amendments to place specific agricultural aspects on the Concurrent List. Legal experts consulted in this research favour the concurrent framework approach as most feasible within India's federal structure while allowing for regional adaptation.

Institutional Architecture:

Effective nationalization requires a redesigned institutional architecture that balances centralized strategic planning with decentralized implementation. Key institutional components include:

1. **National Agricultural Planning Commission:** An apex body for strategic agricultural planning with representation from central and state governments, farmer organizations, and technical experts.
 2. **State Agricultural Development Authorities:** State-level implementation bodies with authority over resource allocation, market intervention, and technology dissemination.
 3. **District Agricultural Coordination Committees:** Local coordination bodies integrating government agencies, FPOs, and community representatives for grassroots implementation.
 4. **National Agricultural Technology Corporation:** A specialized entity focused on technology development, demonstration, and dissemination with regional adaptation capabilities.
- This multi-level institutional structure would enable coordinated implementation while accommodating regional diversity in agricultural conditions and priorities.

Potential Challenges and Mitigation Strategies:

Our analysis identifies several challenges to the proposed nationalization approach:

1. **Resistance from Interest Groups:** Large farmers, agribusiness corporations, and commodity traders may resist changes to the status quo. Mitigation strategy: Phased implementation with stakeholder consultation and adjustment mechanisms.
 2. **Implementation Capacity Constraints:** Limited administrative capacity at district and block levels may impede effective implementation. Mitigation strategy: Capacity building programs for government officials and partnership with civil society organizations.
 3. **Fiscal Sustainability Concerns:** The substantial financial requirements may raise fiscal sustainability concerns. Mitigation strategy: Outcome-linked financing with regular impact assessments and adjustment mechanisms.
 4. **Coordination Challenges:** Center-state coordination challenges may complicate implementation. Mitigation strategy: Flexible implementation frameworks with state-specific adaptation options.
 5. **International Trade Implications:** Some nationalization components may raise WTO compliance issues. Mitigation strategy: Careful policy design emphasizing environmental sustainability and food security justifications permitted under WTO provisions.
- Proactive addressing of these challenges through adaptive implementation strategies would enhance the feasibility and effectiveness of the nationalization approach.

Conclusion and Policy Recommendations:

This research demonstrates that a calibrated nationalization approach offers a viable pathway to address the fundamental challenges facing Indian agriculture. The proposed model balances state intervention in critical areas with market mechanisms and community participation, creating a framework for sustainable agricultural development aligned with India's Viksit Bharat 2047 vision.

Our findings indicate that agricultural nationalization, when properly designed and implemented, can effectively address water resource degradation, limited crop diversification, import dependency, technology adoption barriers, and climate vulnerability while promoting equity, sustainability, and productivity. The economic analysis suggests substantial benefits in terms of productivity enhancement, income distribution, import substitution, and employment generation.

Based on these findings, we offer the following policy recommendations:

1. **Adopt a Phased Nationalization Approach:** Implement the proposed four-phase nationalization model with regular impact assessments and adjustment mechanisms.
2. **Prioritize Resource Governance:** Begin with comprehensive water governance reforms as the foundation for sustainable agricultural development.
3. **Expand Strategic Market Interventions:** Enhance state procurement systems with broader crop coverage and regional adaptations based on agro-climatic conditions.
4. **Democratize Agricultural Technology:** Establish universal technology access mechanisms with particular focus on climate-resilient and resource-efficient technologies.
5. **Develop Value Addition Infrastructure:** Create public-sector and joint venture processing infrastructure for strategic commodities, particularly those with high import dependency.
6. **Ensure Stakeholder Participation:** Establish formal mechanisms for continuous stakeholder engagement throughout the implementation process.
7. **Design Robust Monitoring Systems:** Develop comprehensive monitoring frameworks with transparent reporting mechanisms to track progress and identify adjustment needs.
8. **Create Specialized Implementation Agencies:** Establish dedicated institutional structures at national, state, and district levels to ensure effective implementation.

The path toward Viksit Bharat 2047 requires transformative changes in Indian agriculture. The nationalization approach proposed in this research offers a structured framework to achieve this transformation while addressing the immediate challenges facing the agricultural sector. By combining strategic state intervention with market mechanisms, community participation, and technological innovation, India can build an agricultural system that is productive, equitable, and sustainable.

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