



From Scarcity to Sustainability: Bridging the Implementation Gap in India's Food Security Systems

Dr. Niraj

Assistant Professor

Department of Economics

Govt. College for Women, Gurawara, Rewari, India

Abstract

While India has achieved significant milestones in national food production, these gains have not resulted in universal nutritional equity. This research investigates the enduring obstacles to food security, specifically focusing on socioeconomic imbalances, logistical bottlenecks, and the intersection of climate change with food systems. By conducting a critical review of the National Food Security Act (NFSA) and the Public Distribution System (PDS), this paper exposes systemic flaws in procurement and localized implementation. Utilizing a combination of domestic and international benchmarks, the study advocates for a multi-dimensional reform strategy—incorporating crop diversity, digitized distribution, and community-led nutritional initiatives. Ultimately, the paper provides a strategic framework to synchronize India's food policies with broader sustainability and resilience objectives.

Keywords; Public Distribution System, Food and Agriculture Organization, National Food Security Act.

1. INTRODUCTION

India's historical transition from a food-scarce nation in the 1960s to a global leader in grain production represents a landmark developmental achievement. However, the enduring challenges of malnutrition and hunger signal profound failures in food governance. While agricultural yields and GDP have climbed, consistent access to high-quality nutrition remains a distant reality for millions.

In alignment with the FAO's multidimensional definition—which integrates availability, accessibility, affordability, and stability—India's food security is currently undermined by socioeconomic inequality, logistical bottlenecks, and climate-induced risks. This is evidenced by India's position in the 2022 Global Hunger Index (ranking 107th out of 121), (Aggarwal, 2011) which highlights the country's difficulty in translating national self-sufficiency into household-level security. With nearly 14% of the population undernourished and high rates of child stunting, the divide between macro-production and equitable micro-distribution is clear.

Systemic issues, including fragmented supply chains and policy implementation gaps within the NFSA and PDS, continue to hinder progress. This research provides a comprehensive analysis of these structural vulnerabilities, proposing a roadmap centered on climate resilience, digital distribution optimization, and localized nutrition programs.

II. RESEARCH METHODOLOGY

This study employs a mixed-methods research design to investigate the complex dimensions of food security in India. Quantitative assessments are derived from secondary data provided by reputable global and domestic organizations, such as the Food and Agriculture Organization (FAO), the Global Hunger Index (GHI), and various national statistical departments. These metrics allow for a longitudinal analysis of agricultural output, public expenditure, and indicators of undernourishment.

This statistical foundation is augmented by a qualitative critique of existing policy frameworks, including the National Food Security Act (NFSA) and the Public Distribution System (PDS). By reviewing academic literature and government white papers, the study evaluates the alignment between policy objectives and field-level execution. Furthermore, a comparative analysis of international success stories—specifically the models utilized in Brazil and Vietnam—is conducted to identify scalable solutions for the Indian context. This dual-lens approach ensures a holistic evaluation of systemic deficiencies and the formulation of viable, climate-resilient interventions.

III. CRITICAL OBSTACLES TO FOOD SECURITY IN INDIA

Despite India's emergence as a food-surplus nation, universal food security remains hindered by deep-seated systemic flaws. The country presents a striking contradiction: record-breaking grain production coexists with chronic undernourishment, particularly among marginalized demographics. While the "Green Revolution" era successfully transitioned India away from the food scarcity of the 1960s, this macro-level success has not trickled down to the rural, tribal, and urban poor.

According to recent metrics from the FAO and the Global Hunger Index, India still struggles with high rates of child wasting, stunting, and maternal anemia. The crisis is no longer one of availability, but of affordability and nutritional quality. Low-income households often dedicate up to 75% of their earnings to basic staples, leaving them vulnerable to inflationary shocks and unable to afford a diversified diet (Balamurugan, 2023).

Furthermore, environmental volatility—ranging from erratic monsoons to soil degradation—constantly threatens agricultural stability. These ecological pressures are compounded by logistical failures in the Public Distribution System (PDS), where "inclusion and exclusion errors" often bar the most vulnerable, such as migrant workers, from receiving aid. Ultimately, India's challenge is a multidimensional struggle involving distribution, gender-based social inequities, and global market volatility, necessitating a shift from production-centric policies to resilience-based governance.

IV. INSTITUTIONAL ARCHITECTURE FOR FOOD SECURITY IN INDIA

India's strategy for ensuring food security is built upon an extensive framework of public initiatives and administrative bodies. Central to this infrastructure are the Food Corporation of India (FCI), the Public Distribution System (PDS), and the National Food Security Act (NFSA). These entities work in tandem to manage the procurement, storage, and equitable dispersion of essential grains across the subcontinent.

The PDS, which originated as a wartime rationing measure, has transformed into a massive logistical operation providing subsidized staples. Managed through a partnership between federal and state authorities, the system operates via "Fair Price Shops" (FPS). Significant policy shifts, such as the 1992 Revamped PDS and the 1997 Targeted PDS, sought to refine the system's reach toward marginalized demographics and the "Antyodaya Anna Yojana" (AAY) for the most impoverished. Despite its scale, the PDS continues to face structural hurdles, including the diversion of commodities, flawed beneficiary identification, and inadequate oversight.

A landmark shift occurred with the National Food Security Act (2013), which transitioned food access from a welfare-based model to a legal entitlement. Covering approximately 810 million citizens, the NFSA integrates the PDS with critical nutrition schemes like the Mid-Day Meal and Integrated Child Development Services

(ICDS). Under this legal mandate, "Priority Households" are entitled to five kilograms of grain per individual monthly at highly subsidized rates.

Under the NFSA, Antyodaya Anna Yojana (AAY) households receive a prioritized allocation of 35 kilograms per month, while other eligible families access staples at nominal rates (₹3/kg for rice, ₹2/kg for wheat). Modern enhancements to the Act have introduced the "One Nation, One Ration Card" (ONORC) for portability and fortified rice programs to combat "hidden hunger" or micronutrient deficits. During the COVID-19 crisis, the *Pradhan Mantri Garib Kalyan Anna Yojana* (PMGKAY) acted as a vital emergency buffer. However, a significant legal bottleneck remains: the continued use of 2011 Census data, which likely excludes millions of eligible citizens due to population growth over the last decade.

The Food Corporation of India (FCI) remains the central logistical engine, managing procurement via the Minimum Support Price (MSP) and maintaining strategic buffer stocks. Despite its importance, the FCI faces an escalating fiscal burden; the cost of warehousing, labor, and transit has surged, with subsidies exceeding ₹2.4 lakh crore in the 2021–2022 period (Kumar, 2023). To address these inefficiencies, the Shanta Kumar Committee proposed decentralizing procurement and adopting Direct Benefit Transfers (DBT) in urban centers. Ultimately, while India's food security apparatus is vast, its long-term viability depends on rectifying "leakages" through digital transparency and reconciling the gap between procurement costs and central issue prices.

V. STRATEGIC INTERVENTIONS IN AGRICULTURE AND LOGISTICS

The long-term stability of India's food systems depends on reinforcing agricultural foundations and updating logistical networks. Although national output has grown, equitable distribution across different socioeconomic classes remains hampered by systemic inefficiencies. A primary bottleneck is stagnant productivity, caused by land fragmentation, deteriorating soil quality, and a lack of reliable irrigation. To mitigate these risks, particularly those exacerbated by climate change, India must transition toward crop diversification—shifting away from a rice-wheat duopoly toward ecologically resilient alternatives like pulses and oilseeds.

Supply chain modernization is equally critical. Massive post-harvest losses, resulting from a lack of cold-chain infrastructure and modern storage, undermine both farmer income and consumer access. Establishing a unified digital marketplace and fostering public-private collaborations in warehousing can create a more responsive and resilient supply network. Furthermore, integrating precision agriculture—such as AI-driven monitoring and data analytics—offers a pathway to optimize resource use and provide early warnings for environmental shocks. When combined with enhanced purchasing power through employment schemes like MGNREGA, these technological and structural reforms can build a food system that is truly inclusive.

VI. EMPOWERING GRASSROOTS ACTION AND ECOLOGICAL RESILIENCE

Resolving India's nutritional challenges necessitates a shift from top-down mandates toward localized involvement and ecological sustainability. Because the drivers of malnutrition vary by region, effective solutions must be socially inclusive and adaptable to specific cultural contexts.

Participatory initiatives, such as village-managed grain banks and women-led self-help groups (SHGs), have proven effective in improving food availability at the household level. Furthermore, embedding nutritional literacy into both formal education and community outreach fosters a culture of balanced dietary habits. To combat micronutrient deficiencies, decentralized social marketing for supplements like iodized salt can be integrated with cross-sectoral efforts between health and agricultural departments.

Parallel to community action is the imperative of climate adaptation. Given India's reliance on seasonal rainfall, the agricultural sector must adopt climate-smart technologies—including moisture-efficient irrigation and stress-tolerant crop varieties. Establishing region-specific agro-climatic strategies and investing in watershed conservation will secure the land's long-term productivity. By aligning traditional ecological knowledge with

modern scientific research, India can transform food security from a state-driven objective into a resilient, community-owned reality.

VII. CONCLUSION

Achieving comprehensive food security is central to India's national development trajectory and its dedication to the UN Sustainable Development Goals. While the nation has transitioned into a food-surplus economy, persistent obstacles—ranging from deep-seated poverty to environmental volatility—prevent equitable nutritional access. This research has identified critical vulnerabilities within the current policy architecture, underscoring the necessity of a structural overhaul in both distribution and procurement.

A holistic resolution requires the convergence of agricultural modernization, streamlined logistics, and improved subsidy targeting. By integrating advanced technology with community-led action, India can revolutionize its food lifecycle—from production to consumption. Ultimately, the evolution of food governance must prioritize climate resilience and inclusivity. A collaborative synergy between state actors and civil society is essential to transform food from a market commodity into a guaranteed universal right.

VIII ACKNOWLEDGMENT

The authors are gratefully acknowledge to Prof. Santosh Nandal from Department of Economics, M.D.U., Rohtak, Haryana, India for providing all the support during this research work.

REFERENCES

- [1] Aggarwal, A.(2011). The PDS in Rural Orissa: Against the grain? *Economic & Political Weekly*, 46(36),21-23.
- [2] Balamurugan, P., & Rajanbabu, R. (2023). Economic Reforms and Unemployment in India. *The Indian Journal of Economics*, 103(411),605-619.
- [3] Bhowmick, S. (2023). Food security in India: A study of district of Howrah. SSRN. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4364042
- [4] Brahmanand, P. S., Kumar, A., Ghosh, S., Roy Chowdhury, S., Singandhupe, R. B., Singh, R., Nanda, P., Chakraborty, H., Srivastava, S. K., & Behera, M. S. (2013). Challenges to food security in India. *Current Science*, 104(7),841–846.
- [5] Chakrabarty, M. (2016). Climate change and food security in India. *ORF Issue Brief No. 157*, 1-12.
- [6] Coffey, D., Chattopadhyay, A., & Gupt, R. (2014). Wealth and health of children in India: A state-level analysis. *Economic & Political Weekly*, 49(15),64–70.
- [7] Dreze, J. (2004). Democracy and the right to food. *Economic & Political Weekly*, 39(17),1723–1731.
- [8] George, N. A., & McKay, F. H. (2019). The public distribution system and food security in India. *International Journal of Environmental Research and Public Health*, 16(17),3221.
- [9] Gibson, M. (2012). Food security—A commentary: What is it and why is it so complicated? *Foods*, 1(1),18–27.
- [10] Himanshu, & Sen, A. (2011). Why not a universal food security legislation? *Economic & Political Weekly*, 46(12),38–47.

- [11] Jain, S. (2016). Food security in India: Problems and prospects. *International Journal of Sustainable Development*, 9(1),1-13.
- [12] Jaswal, S. S. (2014). Challenges to food security in India. *IOSR Journal of Humanities and Social Science (IOSR-JHSS)*, 19(4),93-100.
- [13] Karhad, B. D. (2014). Food security in India: Issues and measures. *Indian Journal of Applied Research*, 4(4),26–29.
- [14] Khera, R. (2010). India's public distribution system: Utilization and impact. *Journal of Development Studies*, 47(7),1038–1060.
- [15] Kumar, I. (2023). Current initiatives and road ahead for food security in India: A critical study. *Sustainability, Agri, Food and Environmental Research*, 11(X).
- [16] McKay, F. H., Sims, A., & vander Pligt, P. (2023). Measuring food insecurity in India: A systematic review of the current evidence. *Current Nutrition Reports*, 12(4),349-358.

