

1. Integrated Cold Chain and Value Addition Infrastructure

Post-harvest losses remain a significant challenge in India, particularly for perishable commodities and there is a need for integrated cold chain and value addition infrastructure

Scale of Post-Harvest Loss in India

India is the 2nd-largest agricultural producer globally, yet its contribution to world agricultural exports stands at only 2.4%, ranking 8th globally, signalling weak farm-to-market efficiency and inadequate value addition. Annual post-harvest losses in India are estimated at ₹1,52,790 crore (Ministry of Food Processing Industries, 2022), reflecting inefficiency across supply chains. Losses are disproportionately high in perishables, highlighting infrastructure gaps –

1. Livestock products – 22% (eggs, fish, meat)
2. Fruits – 19%
3. Vegetables – 18%

These losses weaken India's global competitiveness in agricultural exports and undermine food security and farmer welfare.

Reasons for Post-Harvest Loss

Harvesting & Field-Level Gaps – Premature or delayed harvesting caused by weather uncertainty, labour shortages, and lack of scientific harvesting practices reduces both quality and shelf life. Limited adoption of mechanised harvesters, graders, and sorters leads to bruising, contamination, and spillage.

Market & Financial Constraints – Small and marginal farmers lack liquidity and storage access, forcing immediate sale at low prices (“distress sale”). Warehouse receipt systems and market-linkage platforms are still underutilised.

Infrastructure Deficiencies – Inadequate cold-chain infrastructure, pack-houses, ripening chambers, and modern storage units (e.g., silos). Absence of temperature-controlled logistics and poor rural road connectivity.

Biotic & Abiotic Stresses – Crop spoilage due to pests, rodents, fungal infections, and microbial contamination. Climatic instability (heat stress, unseasonal rains) accelerates deterioration.

Skill & Knowledge Gaps – Limited farmer awareness on scientific post-harvest handling, grading, and packaging. Weak extension services for training on food safety and quality protocols.

Concerns

Economic & Farm Income Loss – Estimated ₹1.5 trillion national income loss annually, reducing contribution of agriculture to GDP. Lower farmer profitability, especially for horticulture and dairy-based incomes.

Environmental & Resource Burden – Food loss represents lost inputs—water, energy, fertilizers, land, and labour. High wastage in paddy contributes to 10+ million tonnes CO₂-equivalent emissions annually due to methane intensity. Losses in livestock products have high embedded resource and emission footprints.

Food Security & Government Burden – Wastage pressures government food subsidy programs, mid-day meals, and nutrition schemes, raising fiscal burden. Weakens national nutrition efforts like Poshan Abhiyaan. Trade Competitiveness & Export Opportunities. Export potential undermined due to inconsistent quality, safety standards, and shelf-life limitations. Low processing capacity compared to global peers reduces value-addition and branding potential.

Government Initiatives

Integrated Cold Chain & Value Addition Infrastructure (ICCVAI) – Implemented under PM Kisan Sampada Yojana (PMKSY) to create modern cold-chains, primary processing centres, reefer vans, and value-addition zones. Focus sectors – horticulture, dairy, meat, poultry, fisheries, marine products.

Mission for Integrated Development of Horticulture (MIDH) – Financial support for cold storages up to 5,000 MT, pack-houses, grading lines, and pre-cooling units. State-driven project implementation with annual action plans.

Operation Greens (TOP to TOTAL) – Launched in 2018–19 to stabilise prices and promote value chain

development for Tomato, Onion, Potato; later expanded to all perishable crops. Encourages food processing, market linkages, and farmer producer organisations (FPOs).

Agriculture Infrastructure Fund (AIF) – Collateral-free loans up to ₹2 crore with 3% interest subvention for post-harvest assets. Supports warehouses, cold-stores, custom-hiring centres, and processing units.

PMKSY – Budget Expansion (2025) – Additional ₹1,920 crore allocated, total ₹6,520 crore for 15th Finance Commission cycle. Shows strengthened political priority for cold-chain and processing expansion.

Achievements and Progress

Rise in cold storage capacity, particularly in potato belts and dairy clusters in UP, Gujarat, Punjab, Bengal. Growth of FPOs facilitating aggregation, sorting, and direct market access for farmers. Scaling up of Mega Food Parks and Agro-Processing Clusters, improving value chain integration. Increased deployment of refrigerated transport units and pack-houses. Digital platforms like e-NAM, ONDC-agri pilots, and private agri-logistics tech systems are improving market linkages. Growing private investment from dairy cooperatives, meat processing companies, e-commerce grocery platforms, farm-to-fork startups.

Conclusion

Post-harvest management reforms are central to achieving Doubling Farmers' Income (DFI), food security, and export competitiveness. Strengthening farmer-market linkages, storage capacity, scientific handling, and cold-chain connectivity remains crucial. The recent scale-up of PMKSY funding reflects sustained commitment to building resilient agri-value chains. Future priorities include integration with agri-logistics corridors, food processing clusters, climate-smart storage, digital traceability, and market reforms to unlock full value.

Source - <https://www.pib.gov.in/PressReleasePage.aspx?PRID=2183607# - ~ - text=The%20scheme%20encompasses%20multiple%20sectors%20crucial%20to%20agriculture%20and%20allied>

