UN environment programme

Cool Coalition
a UNEP-convened initiative

Alliance for an Energy Efficient Economy™

Strengthening Policies and Investment for Clean and Efficient Cold Chain in Haryana

United Nations Environment Programme (UNEP) Cool Coalition in partnership with the Alliance for an Energy Efficient Economy (AEEE), has established the India Cold-Chain Programme (ICCP) to support the Government of India and State Governments to accelerate the deployment of sustainable and integrated cold-chain systems in India and to support the national objective of Doubling Farmers Income and the implementation of India's Cooling Action Plan (ICAP).

Under the aegis of the ICCP project "Scaling up Investment for Clean and Efficient Cold Chain in India", the team provided strategic advisory and technical expertise to government departments, Farmer Producer Organizations (FPOs), industry players, financial institutions and local stakeholders to facilitate the development of climate-friendly and economically viable cold-chain solutions.

Haryana's Horticulture Landscape

Haryana's horticulture landscape is a high-production area, recording an estimated 67 lakh tonnes of produce in 2025–26. However, these production gains have not translated into proportional income increases for farmers due to severe structural constraints in post-harvest management and distance market connectivity. The state's horticultural post-harvest supply chain faces several critical, interlinked challenges.

Infrastructure Gaps

Past focus was on stand-alone cold storage (382 units with 0.82 million MT) while farm-gate pre-conditioning is overlooked.

Requirement for nearly 1700 packhouses (NCCD estimates), however only 33 are operational that rely on conventional designs instead of adoption EE and RE solutions.

Market & Intermediary Issues

Absence of aggregation centers forces fragmented production, making farmers rely heavily on intermediaries resulting in weak bargaining power, sub-optimal prices, and limits access to distant or premium markets.

Post-Harvest Losses

Limited transportation leads to delays in produce evacuation, while the absence of an organized cold supply chain results in excessive and repeated handling. Additionally, limited access to aggregation, precooling, and proper packaging facilities significantly contributes to high post-harvest losses.

These constraints disproportionately affected small and marginal farmers, increasing income volatility and vulnerability to price crashes during peak harvest periods.

Purpose of Case study: This case study demonstrates how the state translates strategic policy intent into actionable interventions to improve farmer incomes, reduce food losses, enable inclusive and climate-friendly growth, and strengthen broad market linkages.

The ICCP Intervention & Key Learnings

Recognizing systemic gaps rather than just fragmented infrastructure needs, the ICCP program intervened to support the State Government.

1 BASELINE ASSESSMENT

- Mapped horticulture production and cold chain infrastructure gap
- Identified key state actors
- Studied policy and institutional landscape
- Conducted cold chain facility analysis

2 STAKEHOLDER ENGAGEMENT

- UNEP Signed MoU with state horticulture department to implement ICCP interventions
- Engaged with DoH, NHB, PCB, HAREDA, SIDBI, SBI NABCONS, FPOs and KVKs
- Conducted workshop with NCCD and DoH Haryana on Sustainable cold chain developemnt and post-harvest management
- Pre-feasibility analysis of a few forward looking FPCs such as Khewra for a potential packhouse deployment

3 STATE GOVERNMENT SUPPORT

- Provided technical support to JICA-assisted Cold Chain Scheme (Financing mechanism, EE and RE technical requirements, DPR templates for integrated packhouse and aggregation centre)
- Conceptualized stubble utilisation note in the cold chain sector
- Drafted state horticulture cold chain policy
- Supported as Knowledge partner in development of mini Centre of Excellence on Sustainable Crop Post-harvest Management and Cold-Chain (CoE-SPMCC)
- Delivered capacity building sessions on cold chain and post-harvest management

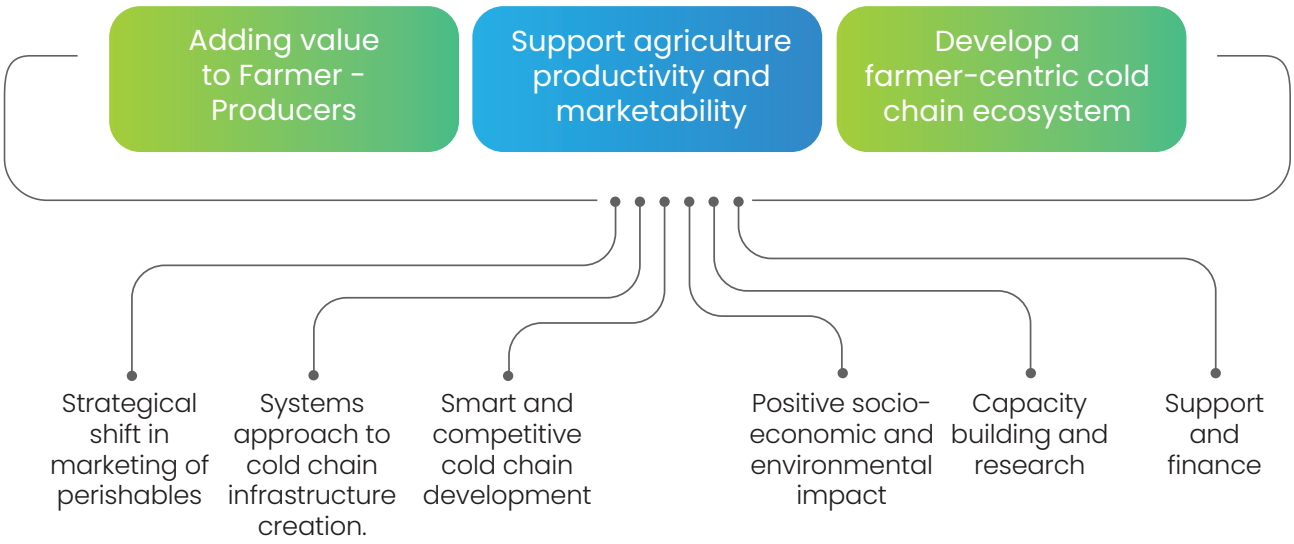
Key learnings

- Significant gaps in cold chain infrastructure and uneven development across the state.
- Limited awareness and technical understanding regarding sustainable cold-chain solutions including EE and RE integrated packhouse design, DPR preparation, and post-harvest management practices.
- Complex subsidy frameworks and weak coordination among financial institutions, government departments, and end beneficiaries hinder effective implementation

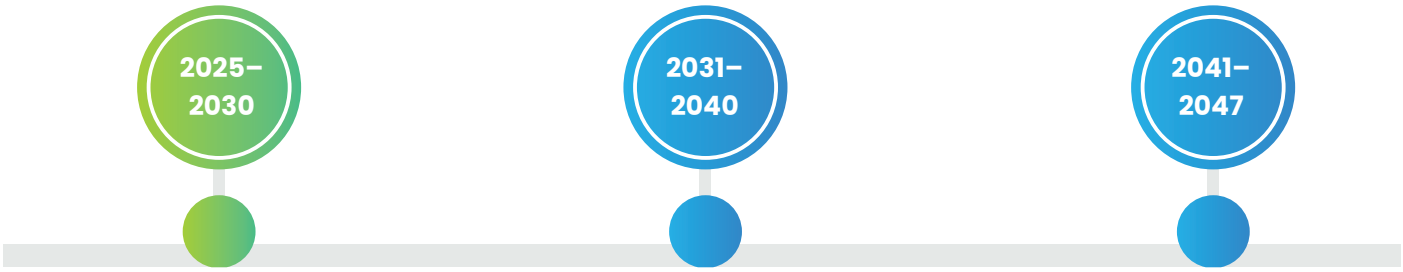
These learnings highlighted the need for a holistic state cold chain policy and have been incorporated into the draft, developed with the Horticulture Department.

The Policy Solution: The Haryana Cold Chain Policy adopted during the Haryana Budget Session (2026-27) was formulated to correct the anamolise in cold chain developement. The policy supports Haryana Vision 2030, Viksit Bharat 2047, and the UN Sustainable Development Goals (SDGs).

Policy pillars and strategic objectives : Add value to farmers through appropriate cold chain connectivity, synchronize farm productivity with market connectivity, develop a transparent farmer-centric ecosystem that is demand-led, and advance climate action via low-emission solutions.



Phased Implementation Strategy



Phase 1

Pilot integrated systems in priority clusters, modernize existing infrastructure, and deploy digital platforms.

Phase 2

Expand coverage to all commodity clusters, ensure digital access for all FPOs, and boost premium/export market linkages.

Phase 3

Achieve state-wide coverage, mainstream renewable energy, and increase premium/export linkages.

Expected Outcomes & Impact

Economic

Higher net returns to farmers through improved market connectivity and price discovery

Reduced wastage translating into better capital efficiency across the supply chain

Social

Inclusion of smallholders and women farmers in organised markets

Local employment generation in post-harvest operations and logistics

Environmental

Reduced emissions through lower food loss and optimised logistics

Adoption of renewable energy and energy-efficient technologies in cold-chain infrastructure

Case Example

The Haryana Cold Chain Policy (2025–2047) provides a systems-oriented, scalable model for transforming horticulture markets. By treating cold-chain as a networked and dynamic market channel rather than isolated storage, it offers a sustainable blueprint for inclusive, climate-resilient growth applicable to agrarian economies globally.

Implementation of one first-mile packhouses (for pre-conditioning with pre-cooling) with throughput of 16 MT/day and 30 MT of staging cold room (transient storage) is expected to yield the following illustrative benefits as per the analysis:

- Directly benefiting a community-based group of 10000-15000 farmers
- Annual avoided loss of approx. 1,000 MT of horticulture produce with full utilization
- Annual GHG emission reduction of approx. 3700 Tonnes CO2e corresponding to food loss avoided

State-Wide Scale (1,700 Packhouses): Fully scaled infrastructure is projected to

- Directly benefit 1.6 to 2.4 crore farmers,
- Prevent 1.6 million MT of produce loss annually
- Reduce GHG emissions by approximately 6 million tonnes of CO2e.

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