INDICOLD®

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COLD CHAIN INTELLIGENCE FOR INDIA'S GROWTH ECONOMY

Chain Reaction

Issue One · The Foundations

Six perspectives on the infrastructure quietly shaping how India's food, beverage, and FMCG sectors grow — and where the real opportunity lies.

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01 | FOUNDATION

What is cold chain infrastructure — and why does it start before the first pallet arrives?

Most people think logistics is about moving goods from one place to another. It is. But for food, beverages, dairy, and frozen goods, movement alone is not enough — what matters is what happens to the product *during* that movement.

This is cold chain. Not a single facility. Not a truck with a cooler. A system with three layers that must work together — and a sequence that cannot be reversed.

01
PHYSICAL INFRASTRUCTURE

The building itself — insulation, flooring, dock design, vapour barriers, structural integrity. This is where cold chain is won or lost, before a single pallet enters. Poor construction cannot be undone: bad insulation means the cooling system fights a permanent losing battle.

02
STORAGE SYSTEMS

Temperature-controlled systems within precise ranges — chilled (2–8 °C), frozen (-18 °C and below), or ambient — with redundant cooling, humidity management, and real-time monitoring. Multi-product, multi-temperature capability separates modern infrastructure from legacy facilities.

03
TRANSPORTATION

Refrigerated primary, secondary, and last-mile vehicles maintaining required temperature profiles throughout transit. The chain is only as strong as its weakest link — and transit is historically where that link breaks. Pre-cooling and dock management are critical.

> **Bad infrastructure does not just reduce efficiency. It makes the entire operation economically unviable. This is where cold chain investments are won or lost — before a single pallet enters the facility.**

Today, Q-commerce promises 10-minute delivery. QSR chains are expanding to hundreds of cities. Food companies are launching chilled and frozen ranges at scale. Every one of these businesses depends on a cold chain that starts with the right foundation.

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LARGEST FRUIT & VEGETABLE PRODUCER GLOBALLY	POST-HARVEST PRODUCE LOST ANNUALLY TO COLD CHAIN GAPS	ANNUAL ECONOMIC COST OF POST-HARVEST LOSSES IN INDIA

Underlying all three layers is a technology backbone — IoT sensors, real-time tracking, temperature logging, WMS integration, and compliance documentation — giving businesses end-to-end visibility into where their product is and what condition it is in at every point of the journey.

02 | THE GAP

India's cold chain is not keeping pace — and the fastest-growing sectors are feeling it most

Consumer demand for fresh, processed, and packaged food is growing faster than ever. Quick commerce has redefined delivery. QSR chains are opening in Tier 2 cities at a pace that would have seemed ambitious five years ago. And yet the infrastructure that should be enabling this growth is not keeping pace. The gap is structural, geographic, and systemic.

Q-COMMERCE

10-minute delivery requires always-on, hyperlocal cold infrastructure at dark-store level. Most existing facilities were never designed for this density or speed of fulfilment.

QSR CHAINS

Consistent food quality across hundreds of outlets requires an unbroken cold chain from central kitchen to each restaurant. One gap in transit means an inconsistent product at the consumer end.

FOOD COMPANIES

New chilled and frozen SKU launches require distribution cold chain at scale. Many innovations die in the supply chain — not in the market.

Nearly **70% of India's cold storage capacity** is concentrated in single-commodity storage — primarily potatoes. The multi-product, multi-temperature facilities that today's FMCG and F&B supply chains need are far too few and far too concentrated in metros.

> **The network has not followed the consumer. Demand is rising in Tier 2 and Tier 3 cities — but cold chain coverage in these geographies remains critically thin.**

THE STRUCTURAL CONSTRAINTS, NAMED

- Fragmented infrastructure
- Tier 2 & 3 coverage gaps
- High energy costs
- Skilled talent shortage
- Compliance complexity
- No end-to-end integration
- Unreliable power supply
- Single-commodity dominance

Fragmentation compounds the problem. Most operators run standalone facilities — storage here, transport there, no integration, no technology layer, no visibility across the chain. The result: companies with strong brands and real ambitions for growth are being constrained by infrastructure that was not built for where the market is going. But gaps, when clearly seen, also point to where the opportunity lies.

03 | THE SHIFT

Automation is not replacing people in cold chain. It is replacing uncertainty — and protecting lives.

Cold chain has always been difficult to operate. Extreme temperatures. Complex inventory. Products with expiry dates that leave no room for error. A missed temperature log, a door left open too long, a pallet in the wrong zone — any one can trigger losses that go well beyond the product itself. Automation changes this not by removing people, but by building systems where precision is the default.

AS/RS SYSTEMS

Automated cranes and conveyors move pallets with millimetre accuracy, around the clock. Storage density improves, handling errors drop, and throughput becomes predictable and scalable without a proportional headcount increase.

SMART WMS

The brain of the operation. Manages FEFO inventory rotation automatically, optimises pick paths, orchestrates every inbound and outbound movement, and provides real-time visibility across every SKU, bay, and dock door.

IOT MONITORING

Continuous sensor-driven monitoring across storage zones, dock doors, and vehicles. Automated alerts fire before a deviation becomes a loss, and every data point creates a tamper-proof audit trail for compliance.

THE DIMENSION THAT RARELY GETS DISCUSSED — WORKER SAFETY

In a manual facility, people work inside environments ranging from 2 °C to -25 °C, for extended shifts, often without adequate rotation or recovery time. The consequences are real: musculoskeletal injuries, hypothermia risk, respiratory stress, long-term health deterioration. AS/RS changes this fundamentally — when automated cranes handle storage and retrieval inside the cold zone, human presence drops dramatically. Workers operate from ambient-temperature control rooms, managing the system rather than physically navigating a sub-zero environment.

> **The cold zone becomes a machine environment — not a human one. This is a fundamental shift in how we think about the dignity and safety of the people who keep cold chains running.**

For Q-commerce and QSR operators scaling rapidly, AS/RS also solves a compounding workforce challenge — the availability and retention of workers willing to operate in extreme cold. The shift from manual to automated is not incremental. It is a different way of operating, where reliability, consistency, scalability, and the safety of the people behind the operation are no longer in tension with each other.

04 | THE OPPORTUNITY

Cold chain is not the backend of a business. It is the foundation on which the front end either stands — or wobbles.

Most companies treat cold chain as a cost — a compliance requirement, a necessary overhead. For a long time, that is largely what it was. But cold chain, when built right, is not a cost. It is a capability — and one that compounds over time.

MARKET REACH

Cold chain reaching Tier 2 & 3 cities unlocks markets competitors physically cannot enter. India's next wave of consumption is not coming from the metros — it is coming from geographies that are formalising fast.

PORTFOLIO GROWTH

Chilled and frozen SKU launches are a distribution challenge before they are a consumer challenge. The right cold chain unlocks product categories and revenue streams that would otherwise remain on paper.

BRAND TRUST

Every QSR meal and Q-commerce delivery carries a silent promise that cold chain either keeps or breaks. Consistency across hundreds of outlets is entirely dependent on the cold chain that feeds them.

> **Many FMCG and F&B companies have innovation constrained not by R&D capability — but by distribution infrastructure. The right cold chain unlocks revenue streams that would otherwise remain on paper.**

A modern, efficient cold chain reduces product losses, improves inventory turns, and lowers cost per unit moved. For high-volume FMCG and F&B operations, the EBITDA impact is material. Regulatory tailwinds add urgency — FSSAI norms are tightening, food safety standards are being enforced more rigorously, and export ambitions require compliance with international standards.

> **Growth is not just about speed. It is about timing. And the right time to build cold chain infrastructure is often when others are still figuring out why it matters.**

05 | ESG & SUSTAINABILITY

Cold chain and ESG — the connection most companies are not making

Sustainability has moved from boardroom aspiration to business imperative. FMCG companies are setting net-zero targets, F&B brands are publishing ESG reports, and regulators — through BRSR in India — are making disclosure non-negotiable. Yet most ESG conversations focus on packaging, sourcing, and manufacturing. Very little focuses on cold chain. That is a significant blind spot.

ENVIRONMENTAL — FOOD WASTE

Food waste accounts for 8–10% of global GHG emissions. India's post-harvest losses run into millions of tonnes annually — every tonne that spoils represents embedded carbon: energy, water, land, and labour wasted entirely. A cold chain that reduces spoilage is, by definition, a carbon reduction strategy.

ENVIRONMENTAL — ENERGY

A poorly insulated building consumes 2–3× the energy of a well-designed modern facility for the same output. High-performance insulation, efficient refrigeration, smart load management, and renewable integration deliver measurable Scope 1 and Scope 2 reductions reportable under GHG Protocol and BRSR.

SOCIAL — ACCESS & SAFETY

Cold chain in Tier 2 and 3 geographies reduces food insecurity by making nutritious food reliably accessible. It supports farmer income stability and dramatically improves worker safety for people operating in sub-zero environments. These are material ESG outcomes — not peripheral ones.

> **For companies building their ESG narrative, the cold chain deserves to be at the centre of that story. Not footnoted in a supply chain disclosure.**

THE BRSR CONNECTION

India's Business Responsibility and Sustainability Reporting framework requires large listed companies to disclose supply chain sustainability metrics — energy consumption, waste generation, social impact. A cold chain with documented temperature logs, automated compliance trails, and third-party auditable data is a governance asset: it reduces regulatory risk, supports export certification, and gives boards confidence the supply chain operates to standard consistently.

06 | INDICOLD

What we are building — and why we are building it now

When we started building Indicold, we kept returning to one question: why do companies with great products, strong brands, and real ambitions for growth find themselves held back by the supply chain behind them? The answer was not one problem. It was a system problem — fragmented infrastructure, disconnected storage and transport, technology that had not kept pace, and a market where the default had become: make do.

We did not want to build another standalone cold storage facility. We wanted to build an integrated cold chain — one that could actually solve for the scale, complexity, and ambition that modern FMCG and food & beverage companies are navigating.

WHAT AN INTEGRATED COLD CHAIN LOOKS LIKE

- Automated warehousing
- Temperature-controlled transport
- Multi-temp storage zones
- IoT-based monitoring
- WMS-driven fulfilment
- End-to-end visibility
- Compliance documentation
- Worker-safe AS/RS operations

> **Cold chain infrastructure in India should not be a privilege available only to the largest companies. It should be accessible, reliable, and scalable — for brands at every stage of growth.**

OUR ESG COMMITMENT

Energy-efficient infrastructure. Automated operations that reduce spoilage. Worker-safe cold-zone management. And supply chain visibility that makes sustainability claims auditable — not just aspirational.

OUR GROWTH THESIS

India's food and beverage market is at the beginning of a significant growth curve. Q-commerce, QSR, and food companies are scaling faster than ever. The infrastructure that supports them needs to grow with them.

One facility, one network, one partnership at a time. If cold chain is something your business is navigating — I would be glad to have that conversation.

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Chain Reaction is a newsletter on cold chain infrastructure, logistics, automation, and the supply chain forces shaping India's food economy. Views are personal.

COMING IN ISSUE 02

The hard conversations — Q-commerce infrastructure, cold chain technology, India's export opportunity, the farmer-to-fork failure, and the talent crisis the industry refuses to name.