

Presented at NCCD's Think Tank Conclave
at PHD House, New Delhi on 31-May-2016



Strengthening India's Cold-chain

"Identifying the Gaps"

An autonomous body to serve as a Think-tank on Cold-chain & Agrilogistics matters.

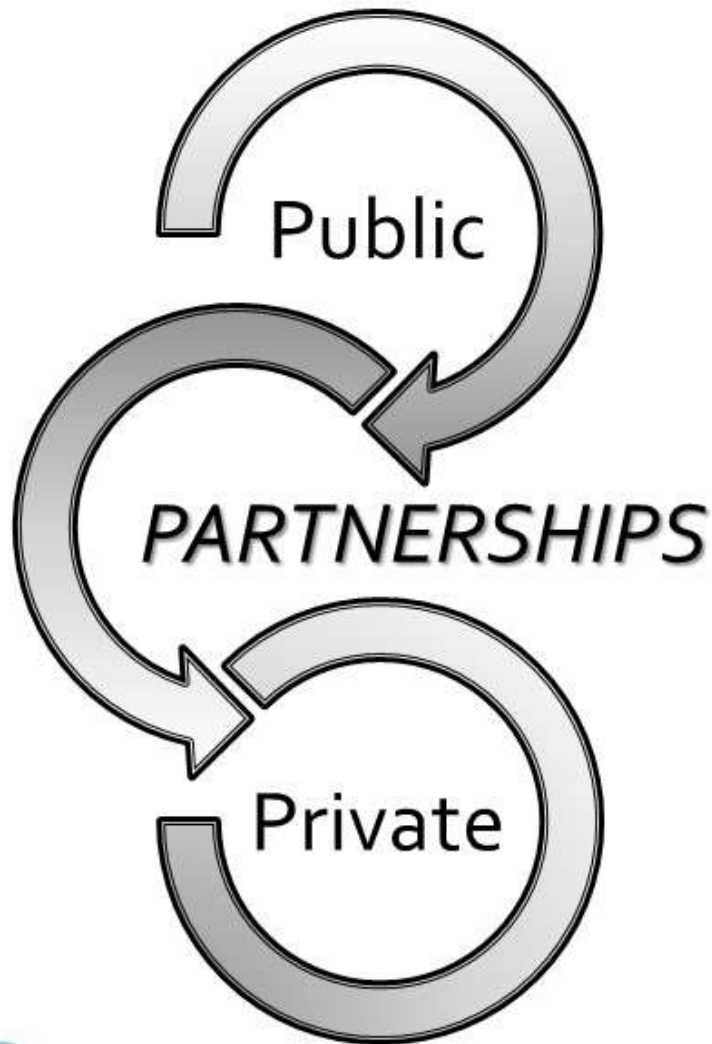
Established to function in PPP mode, to guide policy interventions and disseminate knowledge on the perishables supply chain.



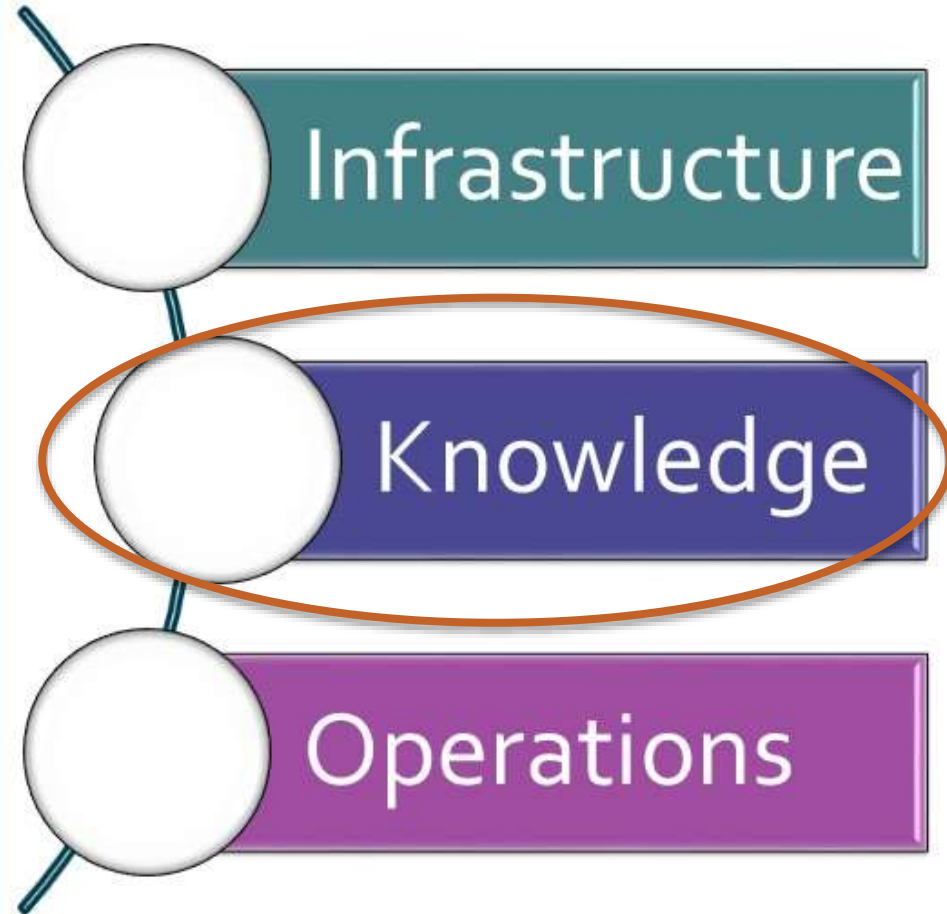
National Centre for Cold-chain Development

राष्ट्रीय कोल्ड-चेन विकास केंद्र

Partnership ...the valued model



Profitability Cycle



Policy makers felt the need for holistic & domain specific knowledge, without any bias, to help set direction.

Need to Identify Missing Links

❄️ World's largest footprint in cold stores

- 134 million mtrs³ in refrigerated storage (33 mill tons)
 - USA has 115 and China 70 million cub. metres of refrigerated space.

❄️ Food loss remained high in the supply chain

- FAO HLPE of 2014 reported 126 kg FLW per capita per annum
- Industry reports indicated 30-40% production lost

❄️ Urbanisation high, population keen for high value foods

- Imports of fresh produce grew 15 to 30 times in 10 years
- Market grows for health conscious viz price conscious

❄️ Farmers socio-economic growth partial

- Production levels high, productivity going waste
- Farmers market access and range limited



Cold-chain: past assessments

❄️ As per NSEL Report (2010)

- Cold-chain requirement = 61.13 mMT
- Existing cold-chain capacity = 24.29 mMT
- Infrastructure gap = 36.83 mMT

Commodity trading,
collateral manager

Broad based Industry
Chambers

❄️ As per ASSOCHAM Report (2012)

- Existing capacity = 30.11 mMT
- Additional requirement = 36.83 mMT

Refrigeration
Equipment Providers

❄️ As per Emerson Climate Report (2013)

- Existing capacity = 30.11 mMT
- Infrastructure gap = 31.02 mMT

Govt Relation
Managers &
Knowledge Bankers

❄️ As per YES Bank Report (2014)

- Added Cold Stores required = 30.98 mMT

Similar reports put forth
by others... accepted by
decision makers!

Each report snowballed from previous, w/o demand baseline

Food Loss

When harvested produce escapes its end use !

How does our food escape ?

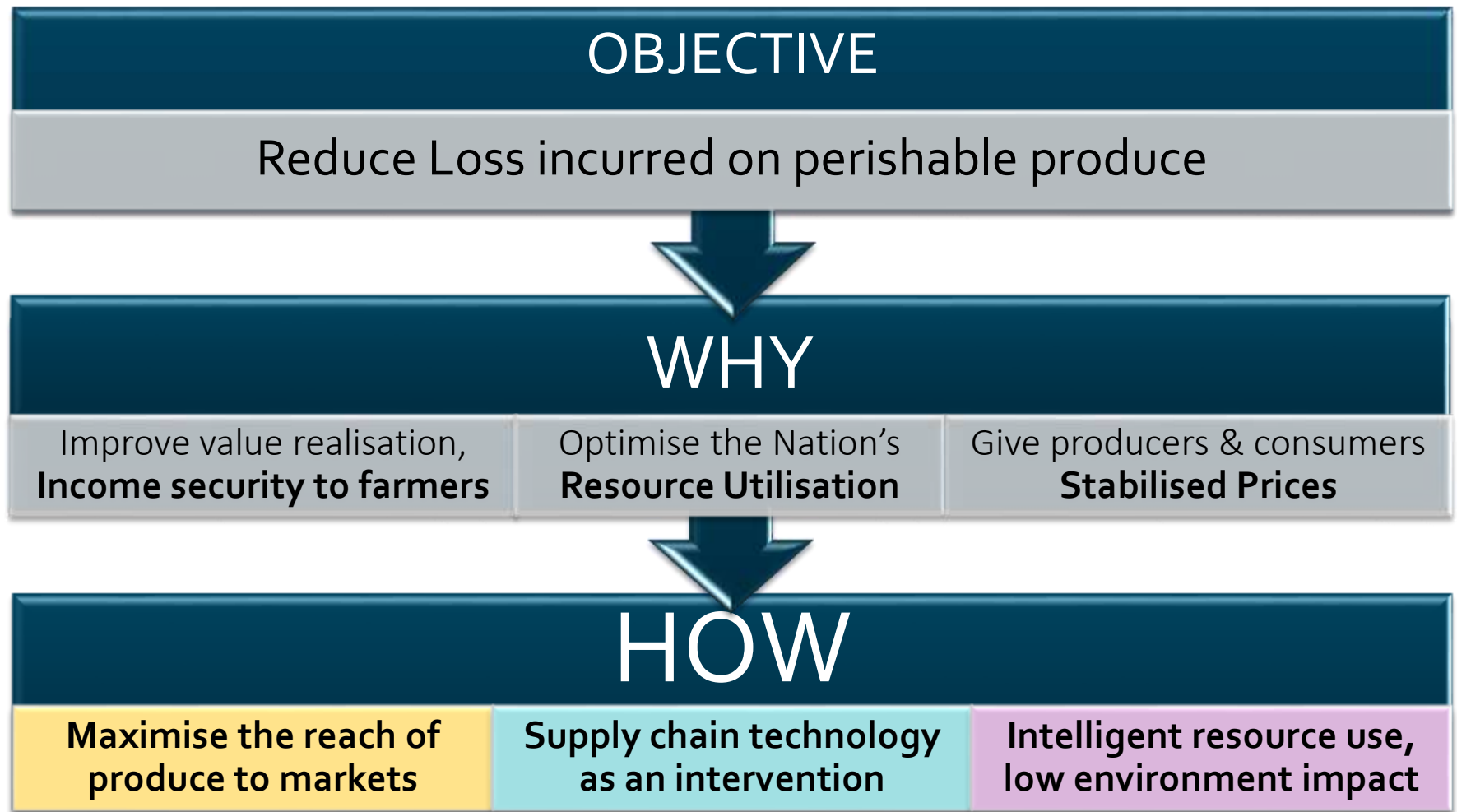
- By perishing before it can reach gainful use !
- Because markets are too inaccessible !

Why are markets inaccessible ?

- Because food is perishable and needs post-harvest care !
- Because Post-harvest care is not market linked !
- Because such Care requires working tools !
- Because such Tools require skills to use !
- Because some stakeholders do not care !



Strategic direction



Development linked to consumers, aimed at “seamless farm to market” logistics, so as to efficiently transfer value as harvested, to consumption.

Gainful Productivity

7

“All Food must be handled with one end-use in aim – **for Consumption**”
Redefine productivity to include market access and market reach.

Holding Life (*useful Life Span of Produce*)

Harvest & Pack-House
Pre-conditioning

Reefer Transport
Travel to Market

Cold Store
Inventory

Retail Shelf
Kitchen Shelf

Preparation

Transit

Shelf Life

The holding life of produce is extended with cold-chain so that a longer presence on shelf or shelf life is possible, creating more opportunity to producers. Without cold-chain, the holding life is limited, thereby narrowing the range of accessible markets.

Shelf life is not to be confused with total Holding Life
“Shelf Life is time spent on Shelves and at Homes”



Supply chain a prime objective – to expand reach, open markets



Space: *Size versus Capacity*

A Cold Store, like any holding space, has capacity to handle large volumes, in multiples of its fixed size



Example: Water Storage Tank

Storage Size fixed volume (*Static*):

1000 litres of water

*Design usage : daily 1000 litres of water,
replenished daily with 1000 litres water.*

Capacity (*Total Handling*) per annum:

1000 litres x 365 days = 365,000 litres

- ❗ Throughput based measures as per product category is used. Considering size alone, will only sanction unwanted cost and capacity overruns.



Cold-chain *Product* Protocols

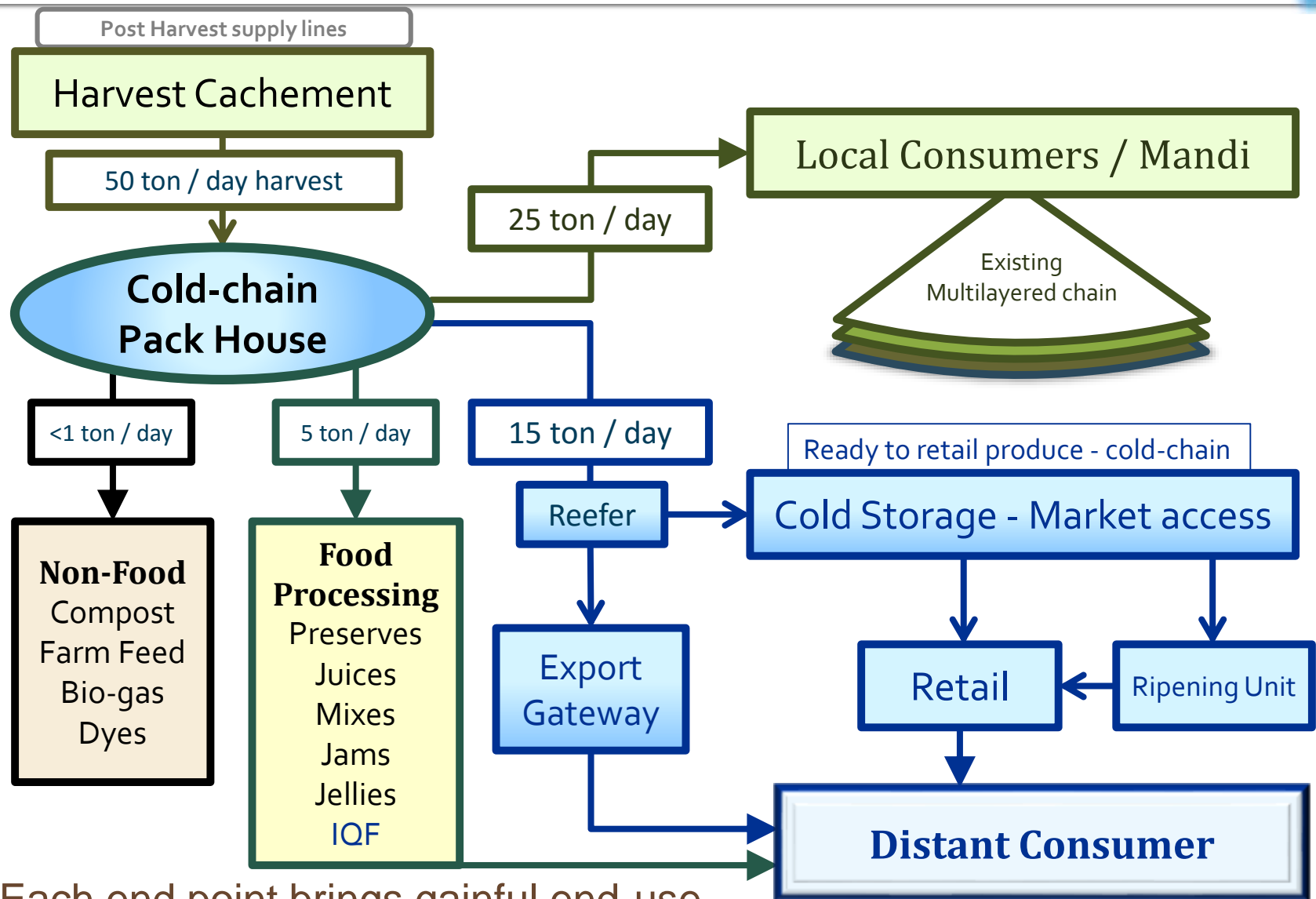
#	Products	Logistics Flow (in order of components)
1	Apple	CS – PH – T – CH - t - FE
2	Grapes	PH – T – CH - t - FE
3	Orange	PH – T – CH - t - FE
4	Strawberry	PH – T – CH - t - FE
5	Kiwi	CS – PH – T – CH - t - FE
6	Potato	CS – Ts – FE
7	Tomato	PH – T – CH - t - FE
8	Onion	SS – Ts – w – FE
9	Cauliflower	PH – T – CH - t - FE
10	Okra	PH – T – CH - t - FE
11	Carrot	CS – PH – T – CH - t - FE
12	Cabbage	CS – PH – T – CH - t - FE
13	Mango	PH – T – CH – RC - t - FE
14	Banana	PH – T – CH – RC - t - FE
15	Papaya	PH – T – CH – RC - t - FE
16	Processed products*	PU – T(s) – CH (w) - t – FE
17	Meat & meat products	PU – T – CH - t - FE
18	Dairy products (cream, Butter)	PU – T – CH - t - FE

LEGEND:

PH- Modern Pack-house; T- Long Haul Reefer Transport; Ts- Non-reefer Transport; CS- Cold Store Bulk; CH- Cold Store Hub; RC- Ripening Chamber; FE- Front-end merchandising; SS- Storage Structure; PU- Food Processing Unit or Allied; t- last mile Transport; w- warehousing

- ❖ Component definitions used and related to the existing schemes and system standards.
- ❖ Logistics aspects of flow, throughput capacity and holding size to be correlated with demand.

Pack-house is the Nerve Centre



A changed approach

Demand Driven Study (*consumption linked*)

- Infrastructure studied as a tool to deliver food.
- Domain specific segmentation of components.
- Requirements assessed for purpose of connectivity.
- Logistics chain evaluated, working backwards from consumption – taking an Inverse approach.
- Holistic development so as to complete the value chain system- to function as a bridge from rural producing areas to urban centres.

...Gainful Productivity the target...
Income security for farmers as the outcome

Focus on reducing Loss in the farm-to-consumer supply chain
Infrastructure assessment on realistic consumption patterns, not notional needs



Domain specific appraisal

Multi-product
Multi Temperature
Multi Chamber
Multi-technology

VOLUMETRIC
THROUGHPUT
is a common metric.

Tons per batch precooling + small cold room

Supply Side

Modern Pack-houses
Farm-gate

Right sizing Capacity and Investments

**Cold Store
Distribution Hubs**

Handling size
weekly/annum

Demand Side

Reefer Transport

Load capacity per trip

**Cold Store Bulk
Warehouses**
Buffer for Supply

Storage space
per annum

Ripening Units

Daily tons per unit

Food Processors

**Cold Store
Distribution Hubs**

**Merchandising
Platform**

Daily tons per unit

All India Gap Assessment

Type of Infrastructure	Total Requirement (A)	All India Existing (B)	All India Gap (A-B)	% share of Gap to Required
Modern Pack-house	70080 units	249 units	69831 units	99.6%
Reefer Transport	61826 units	9000 units	52826 units	85%
Ripening Chamber	9131 units	812 units	8319 units	91%
Cold Storage (Bulk)	34164411 MT	31823700 MT	3276962 MT	10%
Cold Storage (Hub)	936251 MT			

- ❖ Currently majority of infrastructure is in form of Potato based bulk cold stores. Currently, 75% capacity utilization as per NHB survey.
- ❖ Produce from one State finds capacity in neighboring States.
- ❖ The gap is large in case of pre-cooling at pack-houses, transport connectivity and ripening chambers.
- ❖ Mission is to develop integrated and synergistic infrastructure components, so that farmers and consumers will gain from supply chain.



Winds of concept change – supply chain



- ❗ Fresh produce is of delicate... treat with respect.
- ❗ *Supply chain must deliver to shelves & not merely hold inventory.*



Buying time... Run far and fast for a Sale



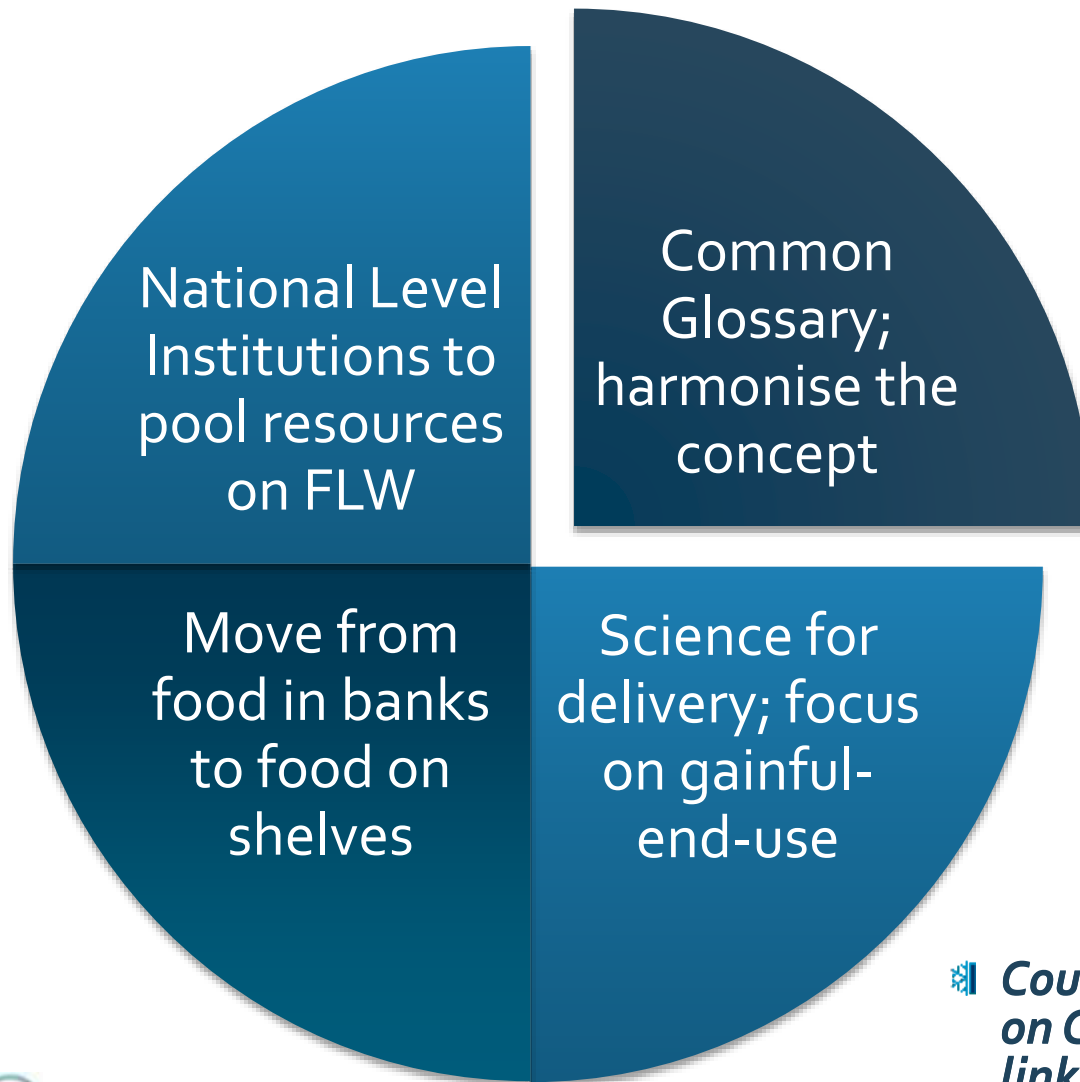
When you buy time through application of technology, use that time intelligently.

When dealing with perishables, use the extra time to advantage, by reaching a market that offers better value realisation.

Do not bide a sale, run for a sale.

Cold-chain is part of the agri-business logistics sector and is clearly understood as an enabling mechanism that connects producing areas with consumption centres. Cold-chain can have the greatest socio-economic impact when used as a logistics medium that empowers the farmers to directly connect with multiple markets, across geographies. Without facilitation of cold-chain, the average farmer of perishable produce has no counter to produce perishability and no other recourse but is constrained to selling off the harvested produce to the closest intermediary.

Bottlenecks



- ❖ Lost in translation – harmonise concept
- ❖ Keep a delivery bias – not mere storage
- ❖ Shelf life starts only when reaching shelves
- ❖ Counter FLW to meet sustainability demands
- ❖ Price and demand in NOT the problem – poor Application of Knowledge is!

❖ ***Country must have a National Policy on Cold-chain – this cross geographical link cannot remain a State subject***

Defining - Rationalising - Harmonising
Making the Cold-chain Smarter



Thank You
नमस्कार



National Centre for Cold-chain Development

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