

# **FOODWORLD - INDIA**

## **Cold Chain Technologies that work for India**

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# Our services

**Supply Chain  
Strategies**

**Managing successful  
projects**

**Distribution and  
warehouse  
development**

**Commercial and  
Contracts**



**Transport  
development**

**IT and WMS**

**Environmental  
Issues**

# Previous Projects in India

**Working for Indian Government  
Departments**

**In partnership with  
Infrastructure Leasing &  
Financial Services (IL&FS CDI)**

**Strategic Distribution  
Centres for food**

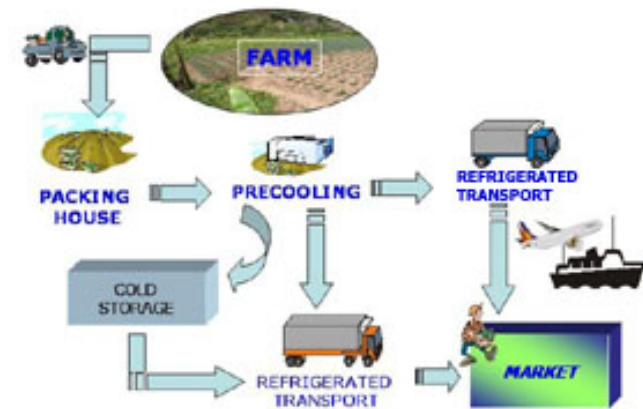
**Agribusiness Infrastructure  
development programme  
(cold chain for fresh food)**



# Cold Chains in India

- Pharmaceutical industry
- Processed food industry – dairy, juices, ingredients etc
- Fresh food industry – fruit and vegetables

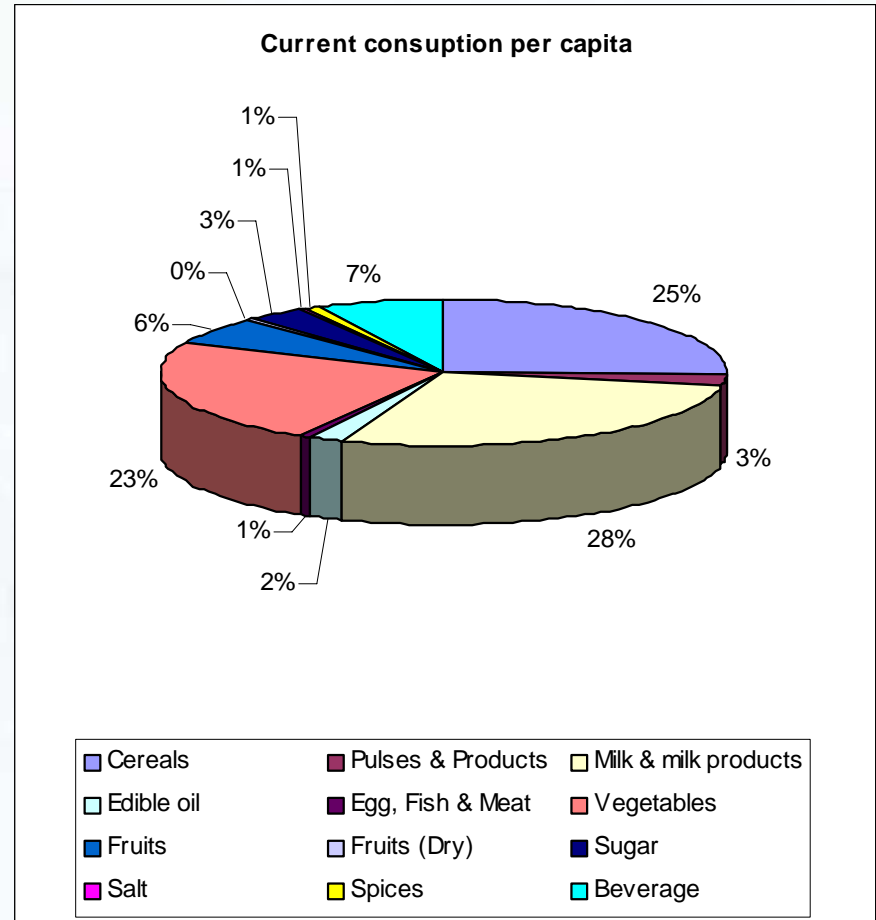
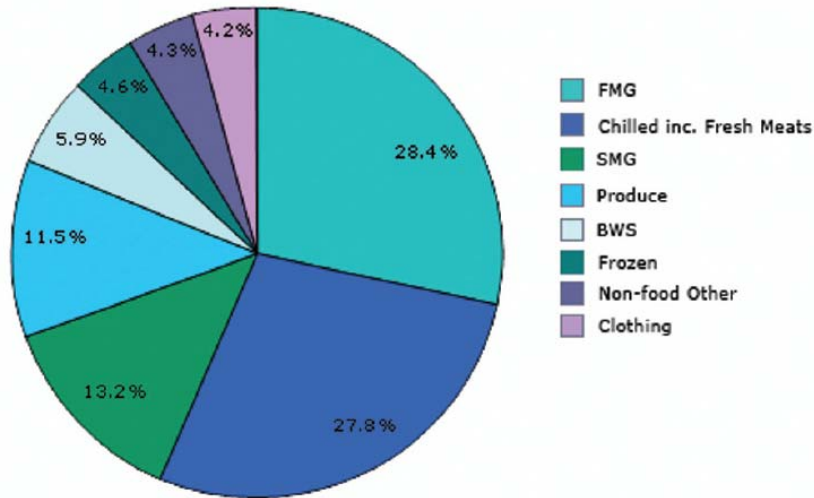
## COMMODITY FLOW IN A COLD CHAIN PROCESS



# Consumption of Food types

Split of typical consumption  
in India

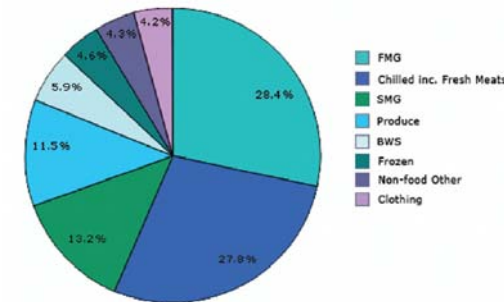
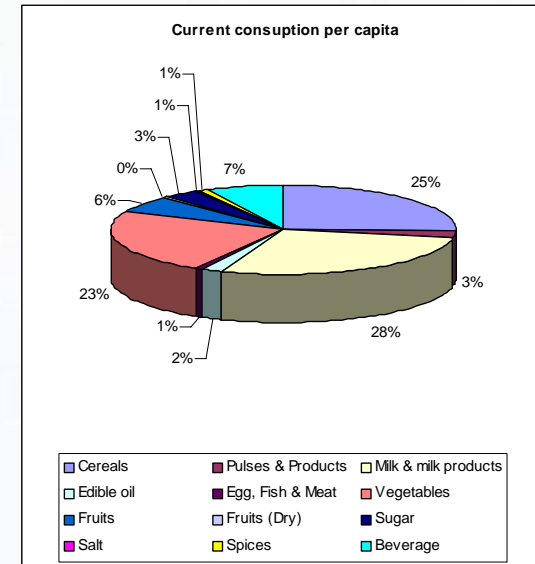
Split of typical consumption  
in the UK and Europe





# Cold Chains in Europe

- Ambient temperatures are far higher in India than Europe
- In UK and Europe over 90% of fruit and vegetables are supplied through the cold chain
- In India a very small percentage of fruit and vegetables are supplied through the cold chain
- Is the solution to just implement cold chain technology in India?



# Structure of Cold Chains in UK and Europe

- Chilled packhouses
  - UK
  - Europe
  - Rest of the World



# Structure of Cold Chains in UK and Europe

- Refrigerated transport
  - Rigid (Trucks)
  - Multi temperature vehicles
  - Trailers (Heavy Goods Vehicles)
  - Containers (Reefers)
  - Chilled airfreight containers





# Structure of Cold Chains in UK and Europe

- Chilled Distribution Centres



# Cold Chain Technology in Europe

- Chilled display in supermarkets
- Refrigerators in houses



# Characteristics of a Western Fresh Produce Supply Chain

- A large proportion of produce is imported;
- As produce is imported from countries with different climates, consumption is not seasonal;
- Imported food can be in transit for days or weeks, requiring chilled transport;
- Fruit and Vegetables are sourced from large farms or organisations;
- Handling of produce is minimised where possible and put into protective packaging at the start of the supply chain;





# Characteristics of a Western Fresh Produce Supply Chain

- The retailer typically has visibility, control or ownership of the entire supply chain;
- The majority of retail outlets are supermarkets with associated facilities and overheads;
- Consumers shop only once or twice a week, requiring products with a reasonable shelf life;
- Consumers will pay more for aesthetically pleasing produce of good quality.



# Characteristics of an Indian Fresh Produce Supply Chain

- Practically all produce consumed is domestic and sometimes regional;
- Most produce is seasonal – limited cold storage;
- Farms in India are smaller with Government acts restricting the land owned by a farmer;
- The supply chain is long with produce going through aggregators, commission agents, traders and two or more markets before reaching the retailer;
- The produce is handled many times by the different parties;





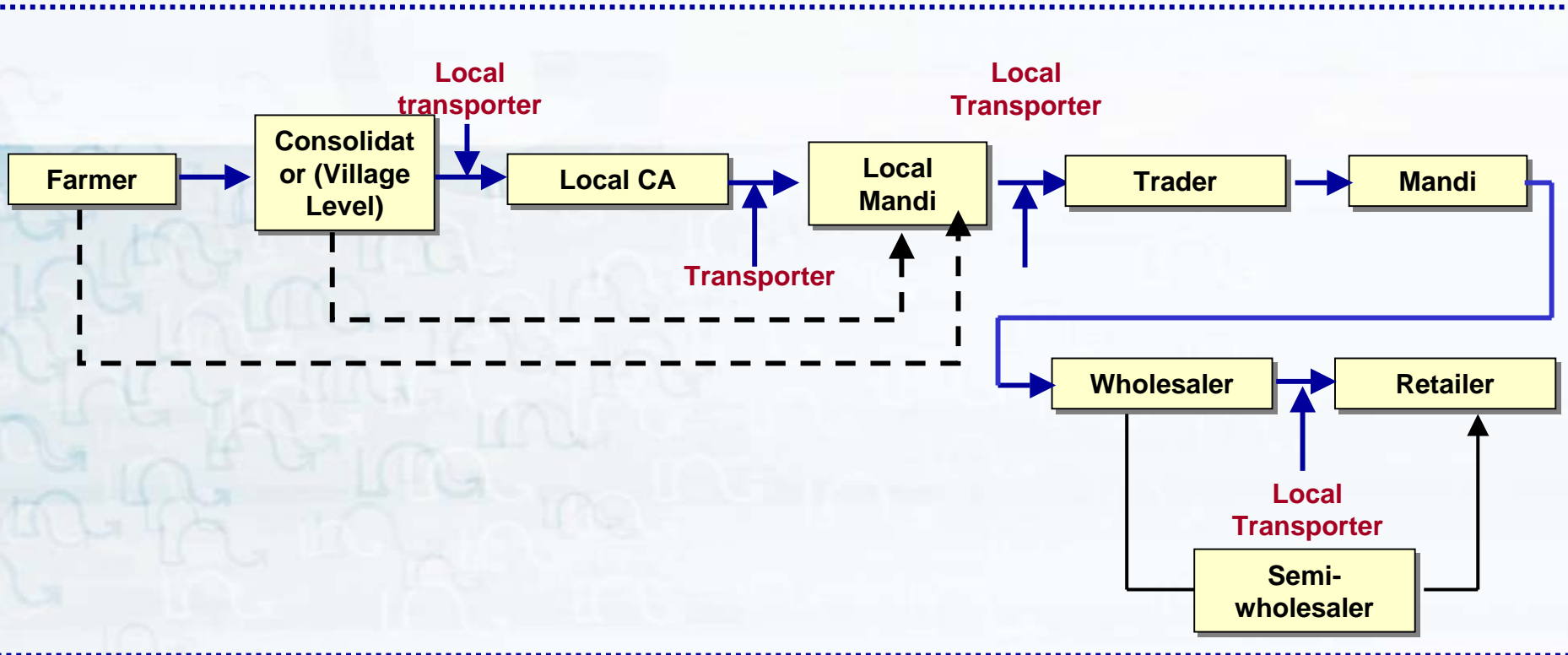
# Characteristics of an Indian Fresh Produce Supply Chain

- Packaging is introduced later in the chain and can provide limited protection;
- The purchaser of produce only has visibility of the immediate vendor and not further up the supply chain;
- The vast majority of produce is retailed through independent fruit and vegetable sellers working from carts and barrows;
- These fruit and vegetable sellers are on most streets making it convenient to buy fruit and vegetables on a daily basis;
- Fresh fruit and vegetables are the staples of the entire population and are relatively low in price;



# Typical Inter-State supply chain

Supply Chains for Green vegetable, Tomato and Onion



- Speed of produce through this supply chain is still relatively fast
- As produce can be readily purchased on many streets, a few days shelf life is often enough for the consumer

# Waste

- High temperatures, ambient storage, multiple handling and rough handling of produce cause waste
- Each participant in the supply chain will want to handle and check the product
- There are many opportunities to improve packaging to reduce waste
- Lesser quality produce still has a market at reduced prices





# Infrastructure - transport

- Transport is almost entirely in ambient trucks
- Some offer protection from the sun with open roofs or tarpaulins
- Roads can be very congested and poorly maintained in some areas
- Chill vehicles are rare. Most are used for export goods.
- There are few suppliers of chill and frozen vehicles



# Infrastructure

- Lack of maintained roads, buildings and electricity in some areas
- Some cold stores are used but typically for potato and many are of concrete construction and old technology
- Cold stores are often multi-user with owners providing a service. Most cold stores were stand-alone facilities





# What is needed to make cold chains successful in India

**Gain value from the benefits the cold chain brings**

- Longer shelf life
  - Transport further
  - Extend growing seasons
  - Smooth peaks in supply and demand
- Less waste
- Greatest benefits from the most valuable produce
- Improved quality of produce (branding)



# What is needed to make cold chains successful in India

## Challenges to implementing Cold Chains

- One organisation having control and visibility of the entire chain
  - Food Retailer
  - Fruit and Veg' supplier to food retailers (Trader, branded product)
  - Third party logistics provider
- Exporters have been successful in implementing entire cold chains for both fresh food and processed foods



# What is needed to make cold chains successful in India

Can you benefit from the piecemeal introduction of cold chain?

- Traders - cold stores in Markets
- Multi-user, multi temperature cold stores in producing and consumption markets
- Long distance transportation of products





# What is needed to make cold chains successful in India

- New pack-houses and modern cold stores have been implemented
- This type of development is usually through cooperatives, consortiums, government funding and foreign investment
- There are some large commercial organisations growing and supplying fresh produce



# Conclusions

- Implementing cold chain technology from Europe is not a problem in India
- It is important to understand why this technology and these techniques are used in Europe
- The existing supply chains and operating methods in India also have to be fully understood to successfully implement the technologies
- There are many cultural, social, and economic differences between Europe and India and these have to be understood
- The same process applies to other supply chains

