



**Asia-Pacific  
Economic Cooperation**

**APEC Workshop on Food Security in Tokyo, Japan  
10 September 2013**

# **Cold Chain Infrastructure and Related Industries -Contribution to food losses / waste reduction-**



**NAOJI KATO  
Director, Executive Vice President  
Nichirei Foods Inc.**

# Corporate Profile “Nichirei Corporation”




Nichirei Corporation -Holding Company-  
**Group Statement: Networking “Good Taste” and “Freshness”**



**Nichirei Foods Inc.**  
Processed Foods



**Nichirei Logistics Group Inc.**  
Logistics



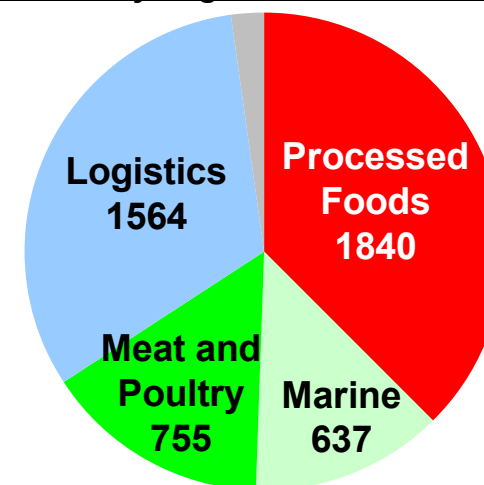
**Nichirei Fresh Inc.**  
Marine & Meat and Poultry



**Nichirei Biosciences Inc.**  
Biosciences

Net sales by Segment FY2012: Million \$

- Established: **December 1, 1945**
- Head Office: **Tsukiji, Chuo-ku, Tokyo**
- Paid in Capital: **\$303 million** (@JPY 100/\$)
- Net Sales: **\$4.7 billion** (FY2012 ended March 2013)
- Number of Employees (consolidated): **12,082**



## **1. Cold Chain Infrastructure - Key part of food supply chain**

**Well recognized in my past presentation, as below:**

- September 2012: Presentation at APEC Workshop on Food Security in Tokyo, Japan
- January 2013: Presentation at PPFS in Jakarta, Indonesia  
“A Cold Chain Proposal for Food Loss - Learning from the Past and Present of Japan -”
- May 2013: ABAC Japan Forum of Mid-Year Activities in Tokyo, Japan  
“Building of Cold Chain Infrastructure through PPP”
- June 2013: Presentation at PPFS 2<sup>nd</sup> Meeting in Medan, Indonesia  
“Cold Chain Infrastructure -Suggestions from Japan as Solution Provider-”
- August 2013: APEC Seminar on Strengthening Public-Private Partnership to Reduce Food Losses in the Supply Chain, in Taipei  
“Cold Chain Infrastructure -Suggestions of the public role in the PPP-”

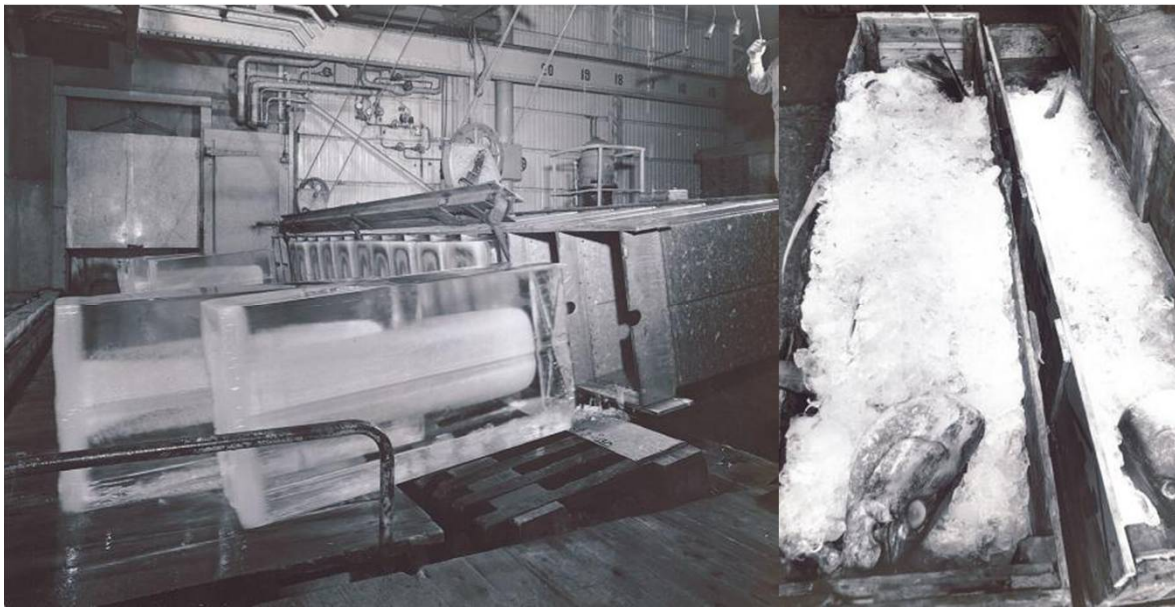
## **2. Establishing the Cold Chain Infrastructure**

- Requires a strong Policy Partnership of Public and Private – Japan case

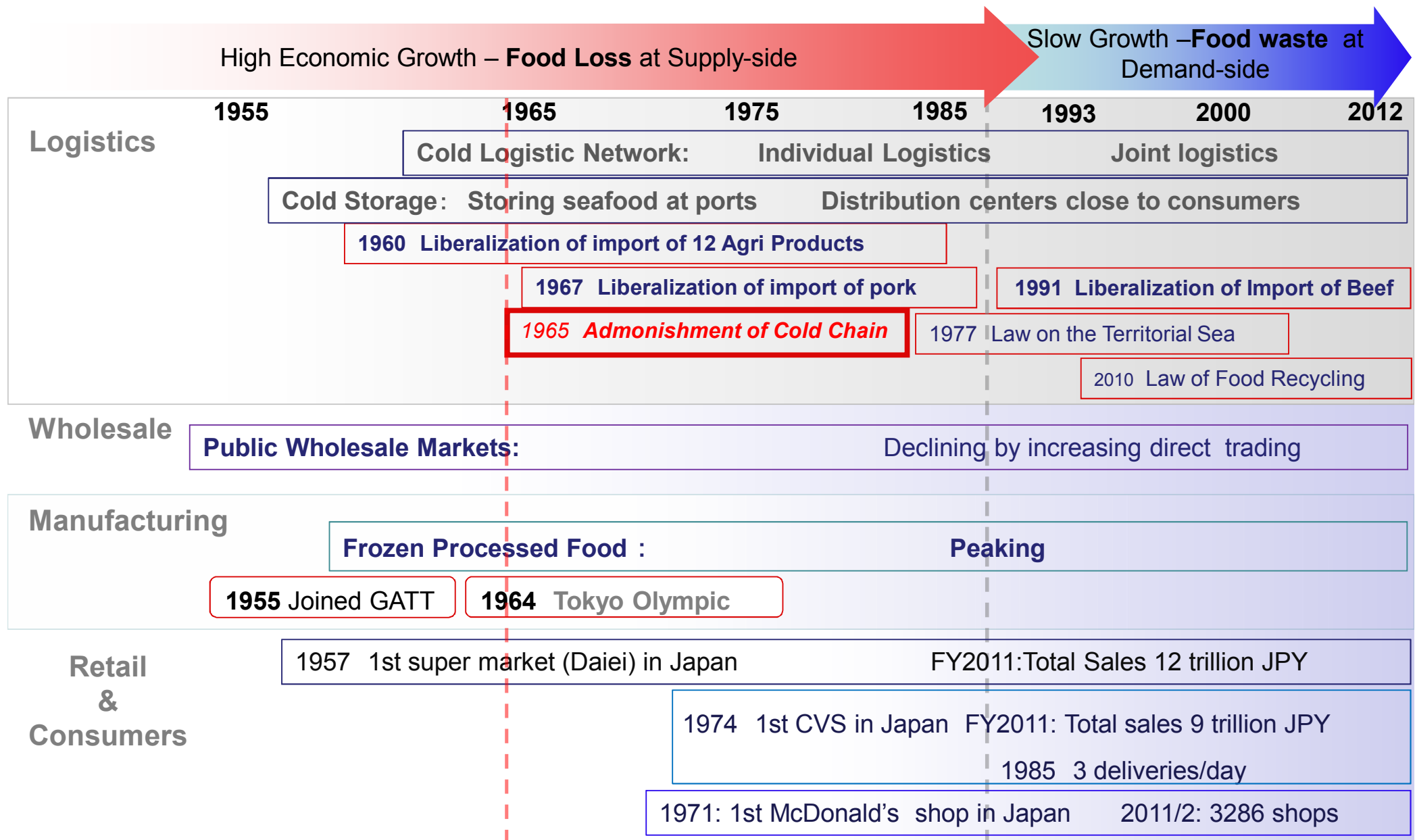
## **3. Contribution to food losses / waste reduction by Cold Chain Infrastructure & related industries**

- Technology of cold logistics
- Cold chain infrastructure for social / environmental sustainability
- Efforts to reduce food losses / wastes
- Case of business model

# 1. History of Cold Chain Infrastructure in Japan



# Development of Food Supply Chain in Japan



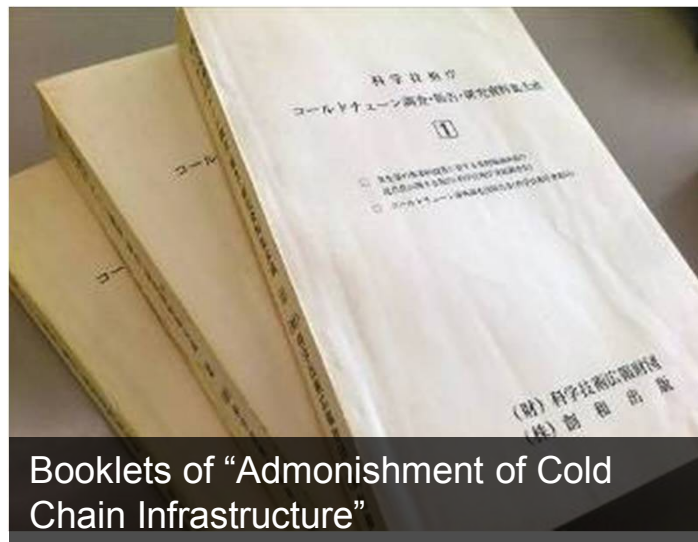


# Japan Government's Initiative in 1965

## “Admonishment of Cold Chain Infrastructure”:

Recommendation to modernize the comprehensive food supply chain system to contribute to the systematic development of diet style

1. Construction of cold chain
2. National food grades/standard and inspection system
3. Information system on food distribution
4. Processing & transfer center system
5. R & D of food distribution



Booklets of “Admonishment of Cold Chain Infrastructure”



Large amount of research data attached in the booklets

Source: Science and Technology Agency, Resources Research Council, 1965

## 1. Improvement of diet style

Unbalanced nutrition from grain (carbohydrate / excess salt)  
→ High nutrition from fresh meat / vegetables (protein / vitamin)

## 2. Stabilizing the price of food

Unstable crop → Stock and stable supply

## 3. Needs of industries

Trading company: sales of imported products

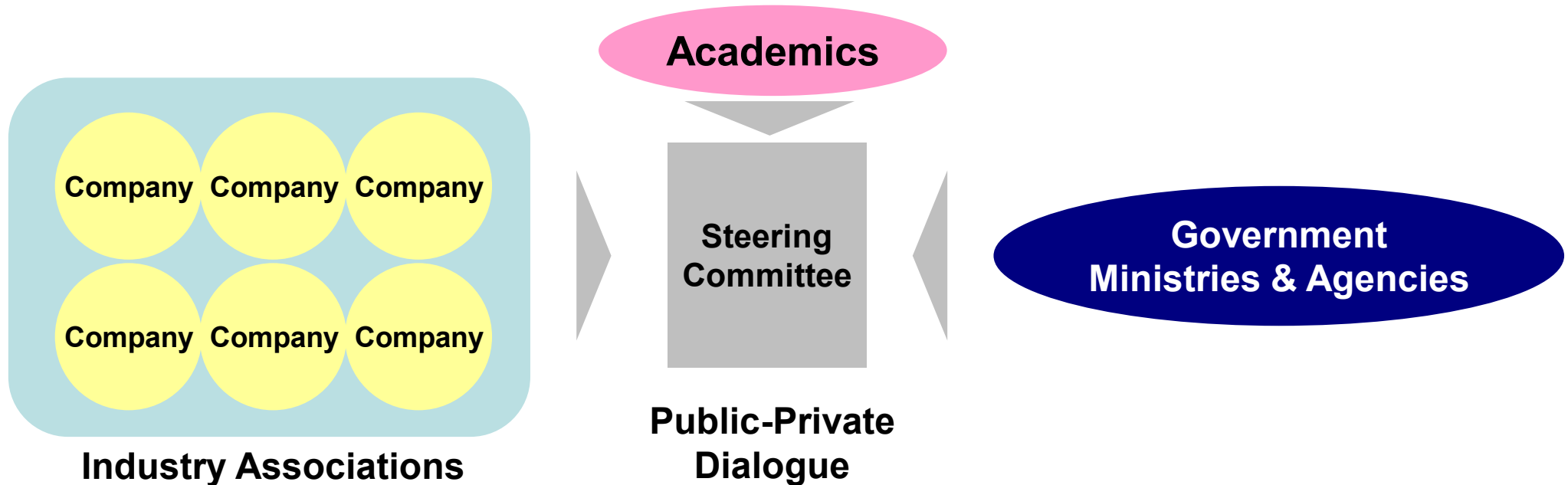
Fisheries company: sales of fresh fisheries products

Food manufacturer: sales of processed frozen foods

Retailer: purchasing fresh foods

Home appliance manufacturer: sales of refrigerator

# Industry Associations in Japan



## Role of Industry Associations

- Policy proposal
- Dialogue with governments
- Establishment of industry-standard / rule
- Development of industry statistics
- Public relations

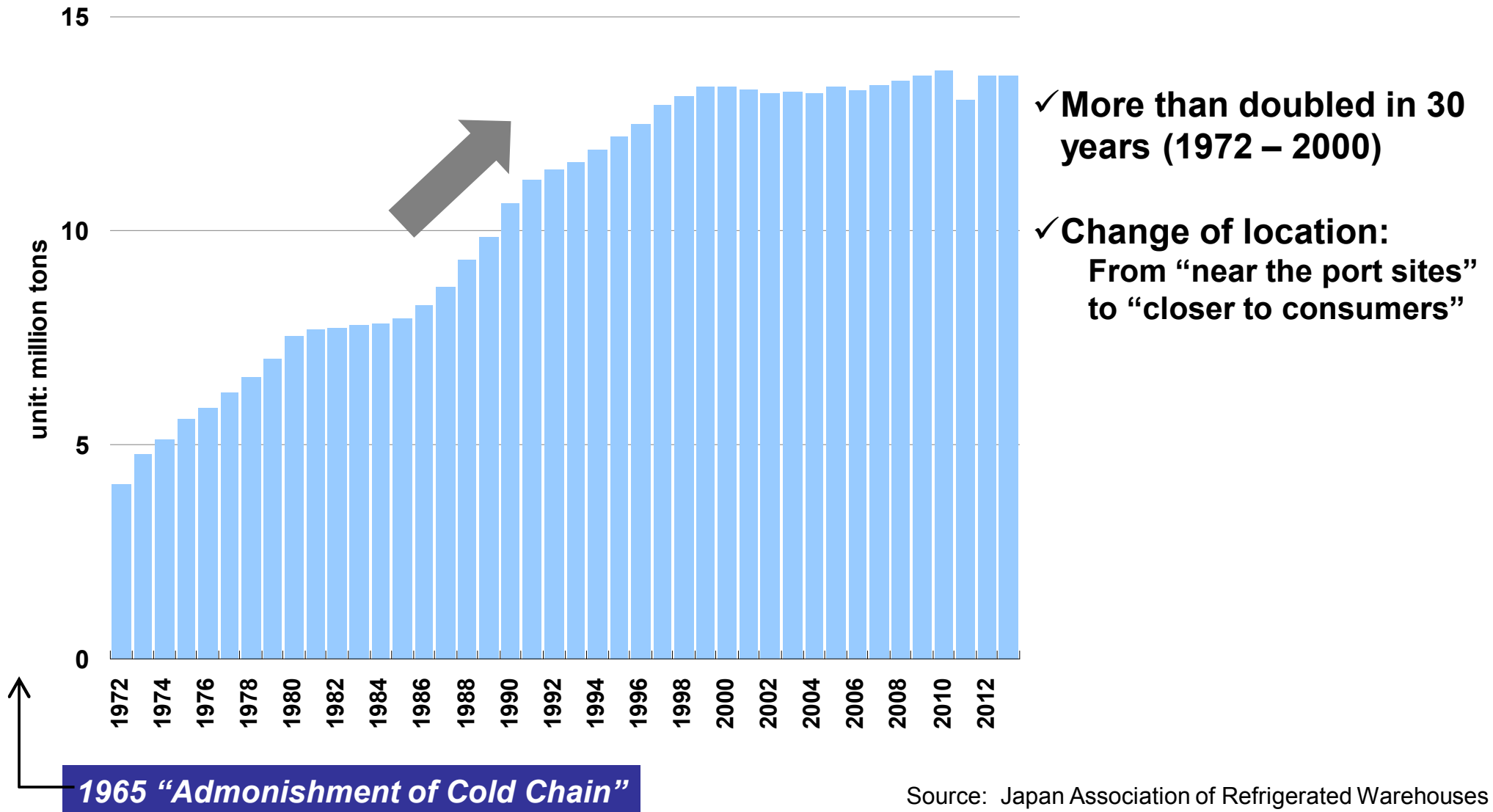
## Example of Industry Associations

- Japan Association of Refrigerated Warehouse
- Japan Frozen Food Association
- Japan Trucking Association
  
- Japan Business Federation “Keidanren”
- Japan Association of Corporate Executives



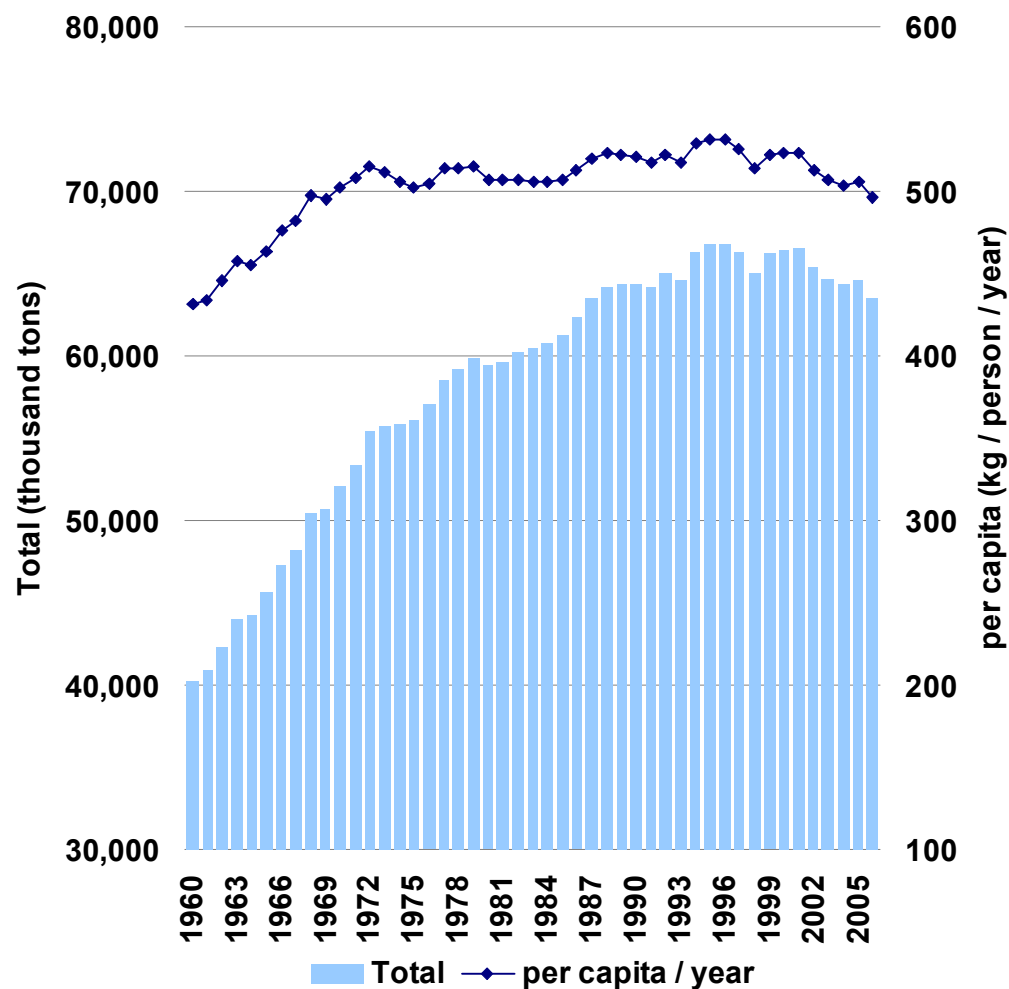
# Development of Low Temperature Logistics

## Trends in Capacity of Cold Storage Warehouses - Japan



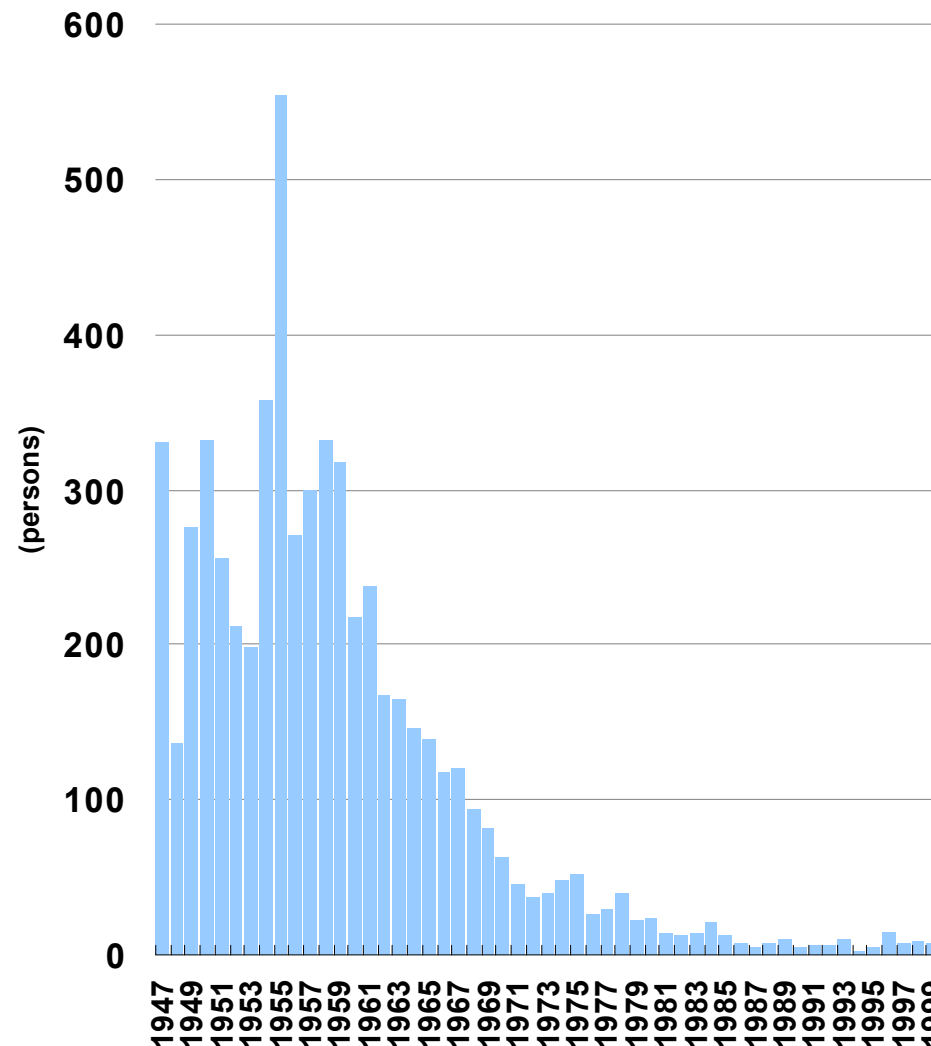
# Food Safety & Stable Supply

## Food Consumption - Japan



Source: "Food Balance Sheet", MAFF

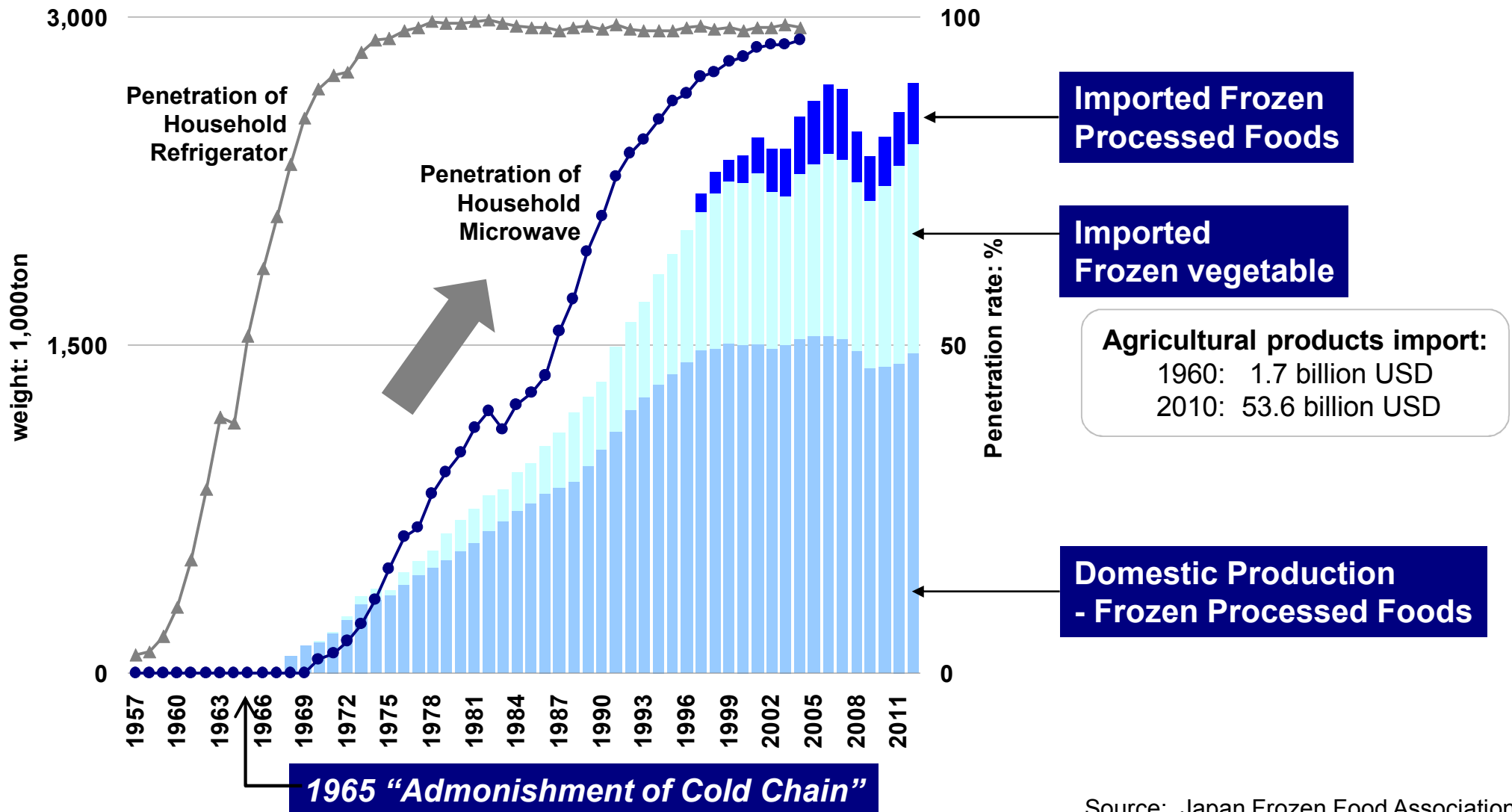
## Deaths of food poisoning



Source: Statistics Bureau, Ministry of Internal Affairs and Communications

# Development of Frozen Processed Food in Japan

## Trends in domestic frozen food consumption and penetration of home appliances

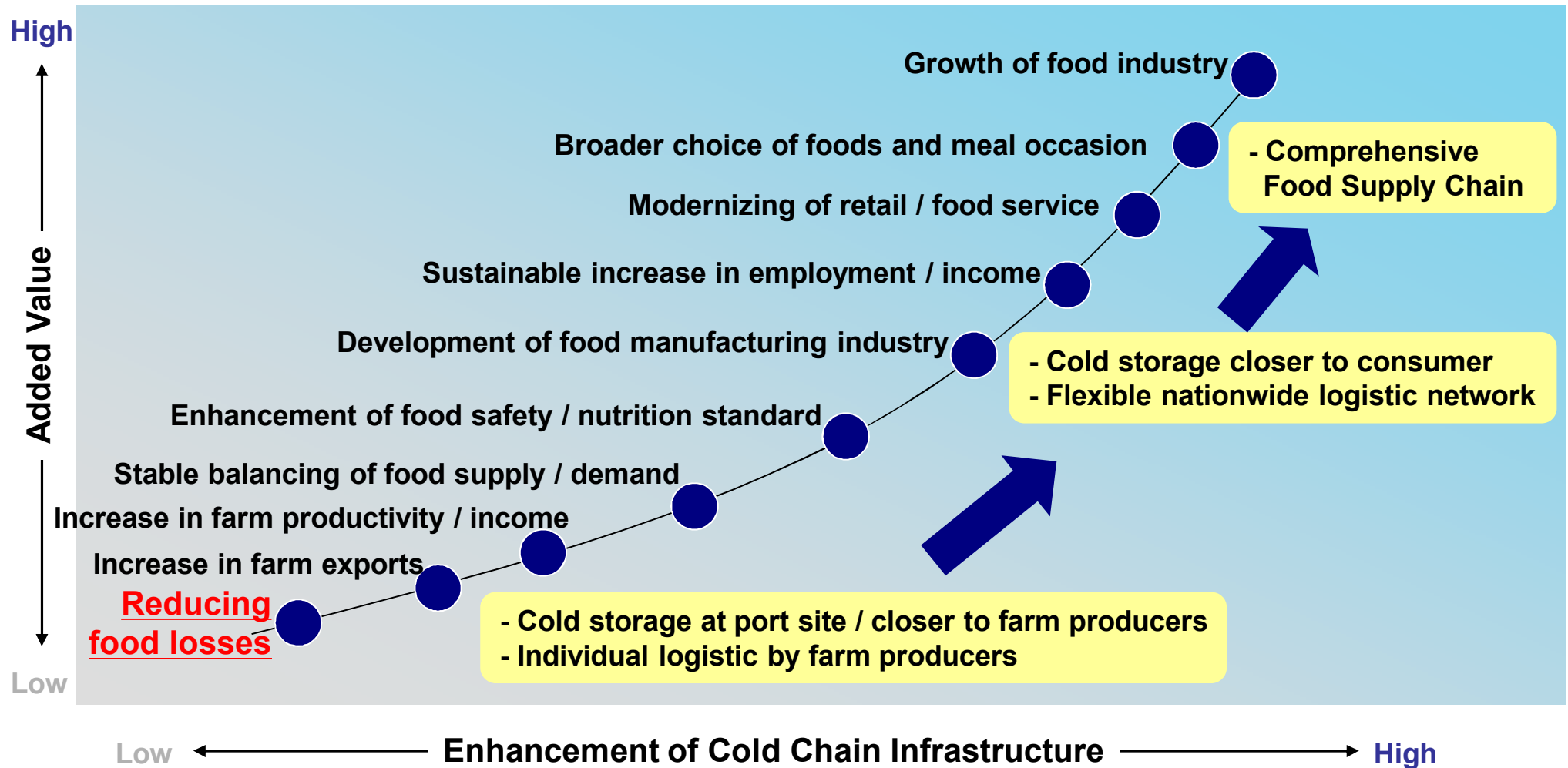


Source: Japan Frozen Food Association

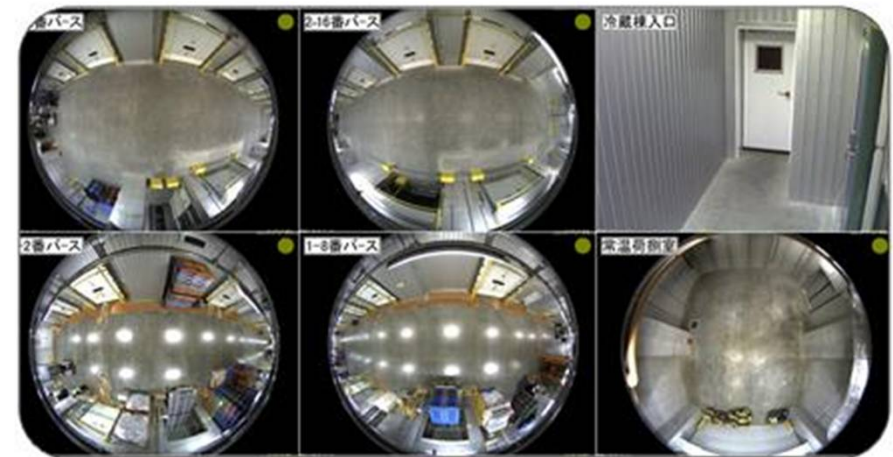
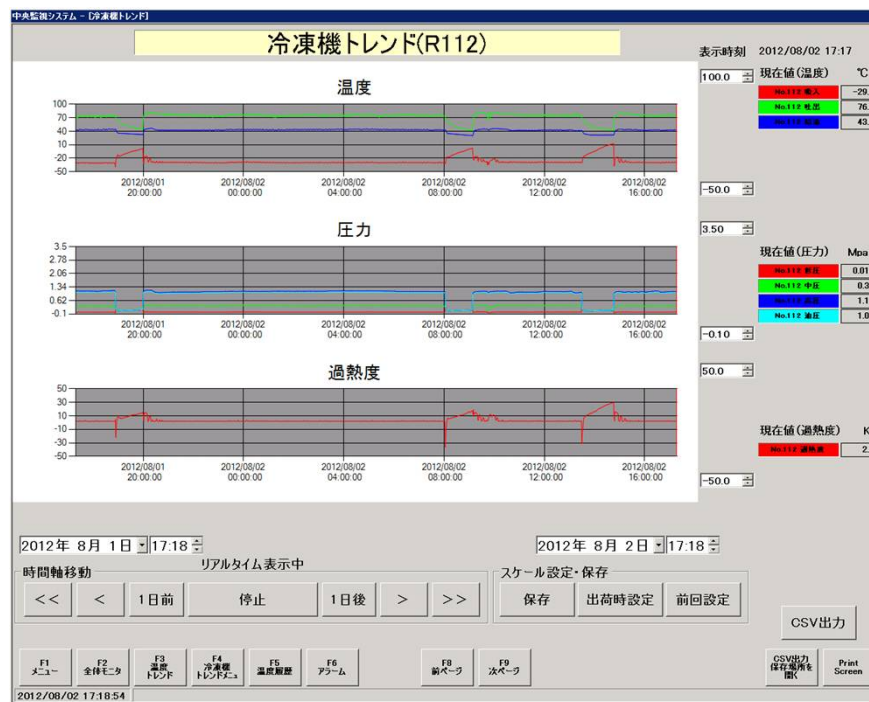
# Benefits from Cold Chain Infrastructure

## Historical Development :

### Creating added value of food industry / Enhancement of cold chain infrastructure

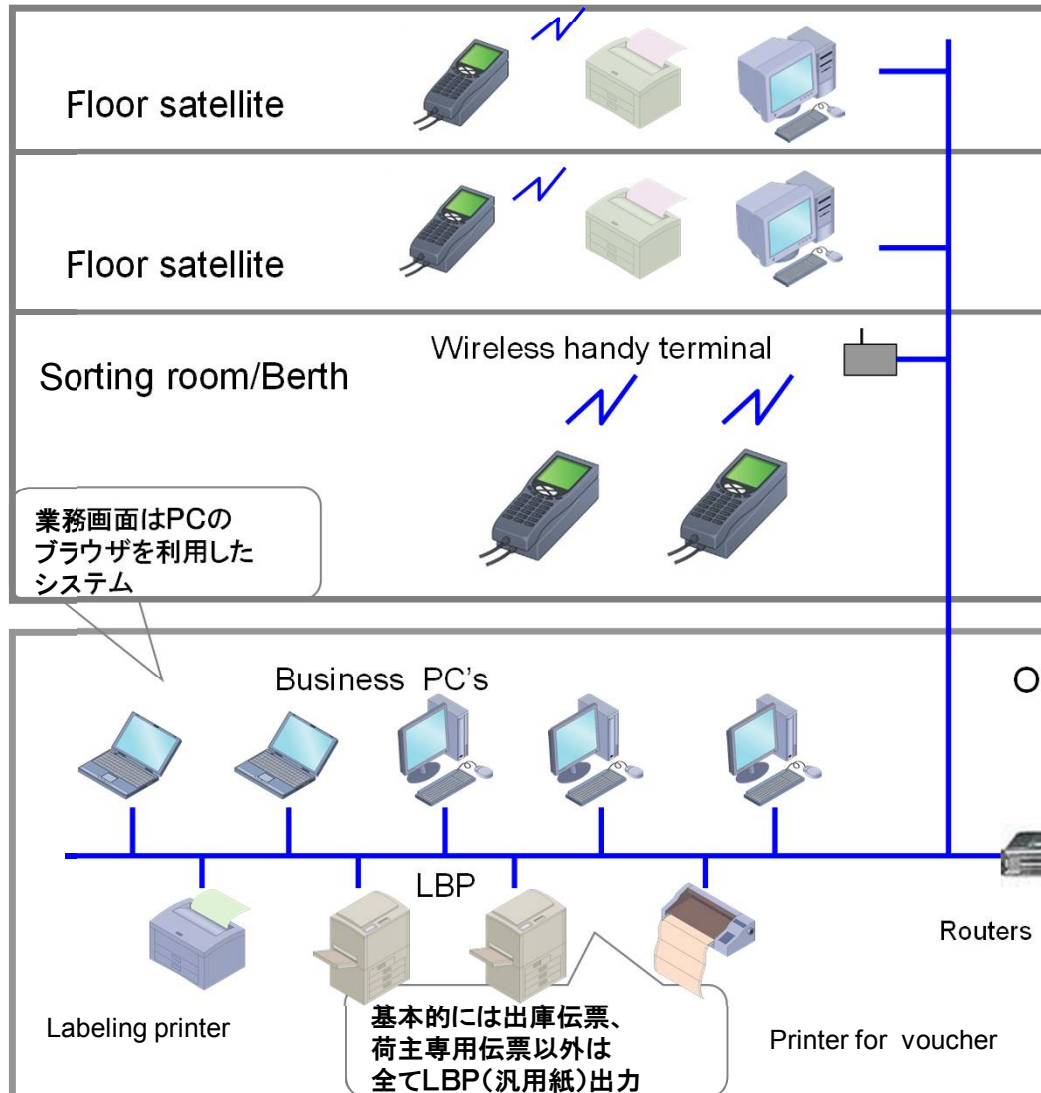


## 2. IT Development -Modern Logistics-



# Information Technology for Logistics

## Cold Warehouse side

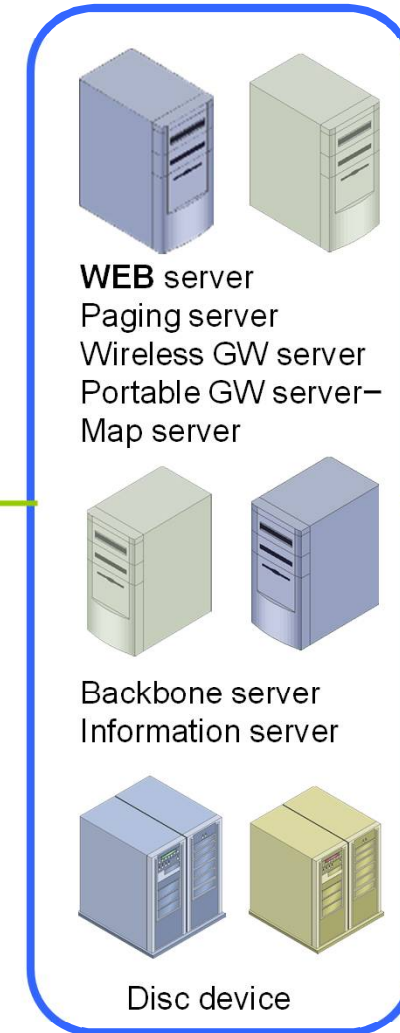


Storage facility

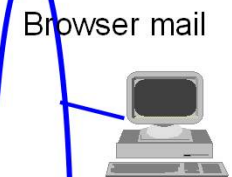
Network

Office facility

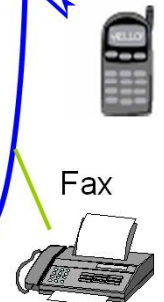
## Data Centers



Customers



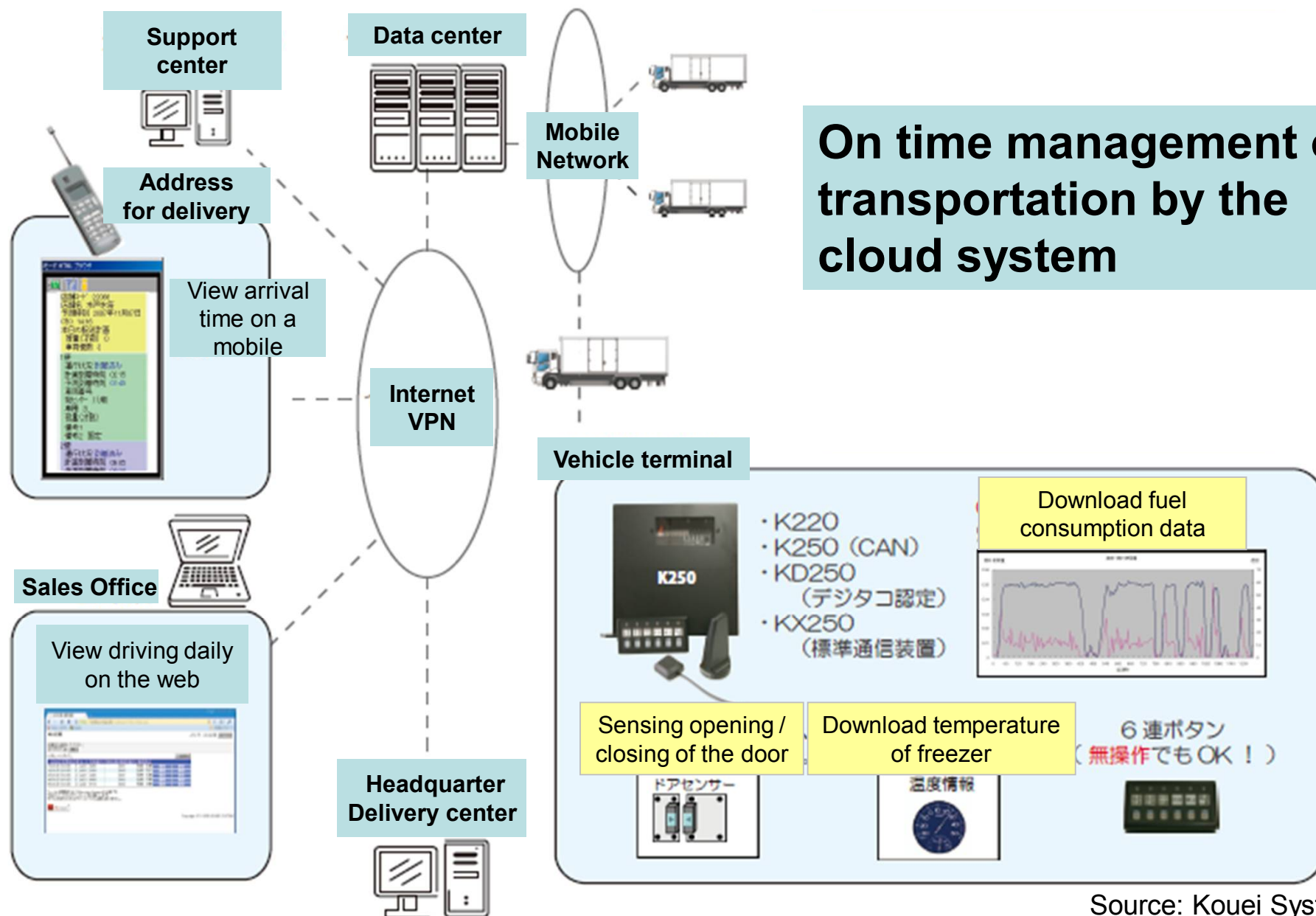
Internet



Source: Nichirei Logistics Group Inc.



# Transportation Management System



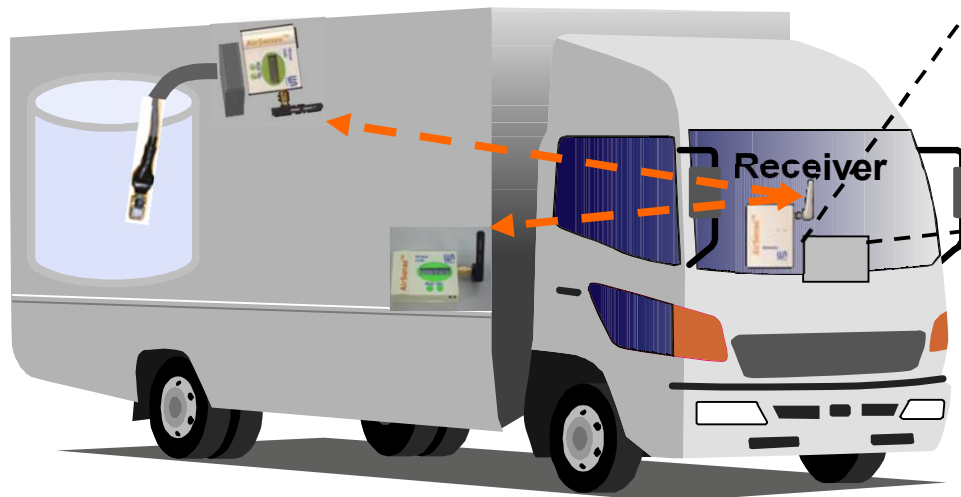
Source: Kouei System Ltd.

# Quality Management Measure during Delivery

## Forestalling of quality deterioration of goods

- All-time monitoring of vibration, temperature and humidity during delivery

All-time monitoring/recording of vibration, temperature and humidity



In-vehicle dynamic monitoring terminal

**Application : frozen foods, medicines, cosmetics, precision instruments**

Source: Hitachi, Ltd.,

### 3. Cold Chain Infrastructure for social / environmental sustainability

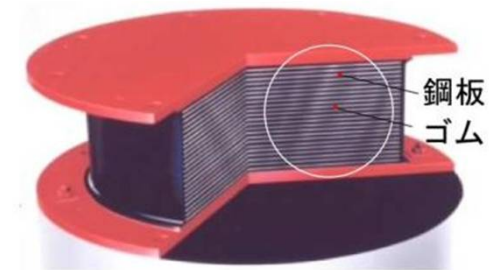
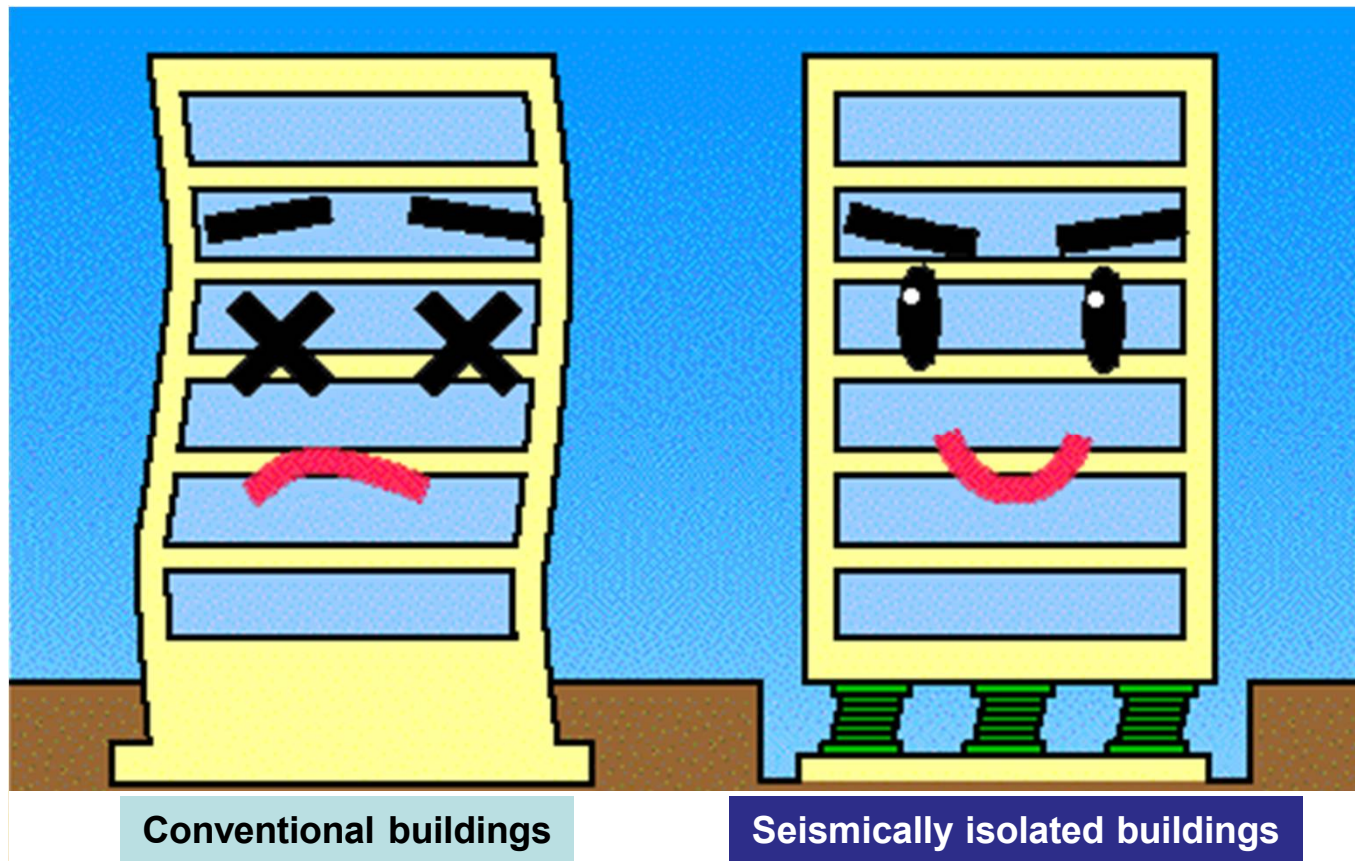


*Inochinomori* ("forest of life") is a project launched by Nichirei Fresh to achieve environmental friendliness and the sustainable procurement of raw materials. The project appropriates part of the proceeds from shrimp grown in an extensive culture system to mangrove planting on the Indonesian island of Kalimantan for the purpose of attaining harmonious coexistence with the environment and the local community.

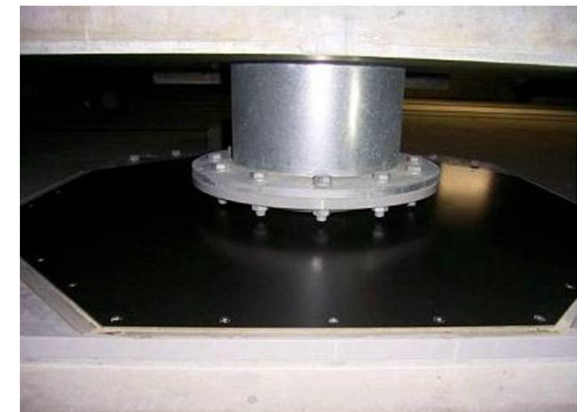


# Seismically Isolated Cold Storages

Building facilities with a structure designed to absorb quake



Vibration damper



Source: The Japan Society of Seismic Isolation

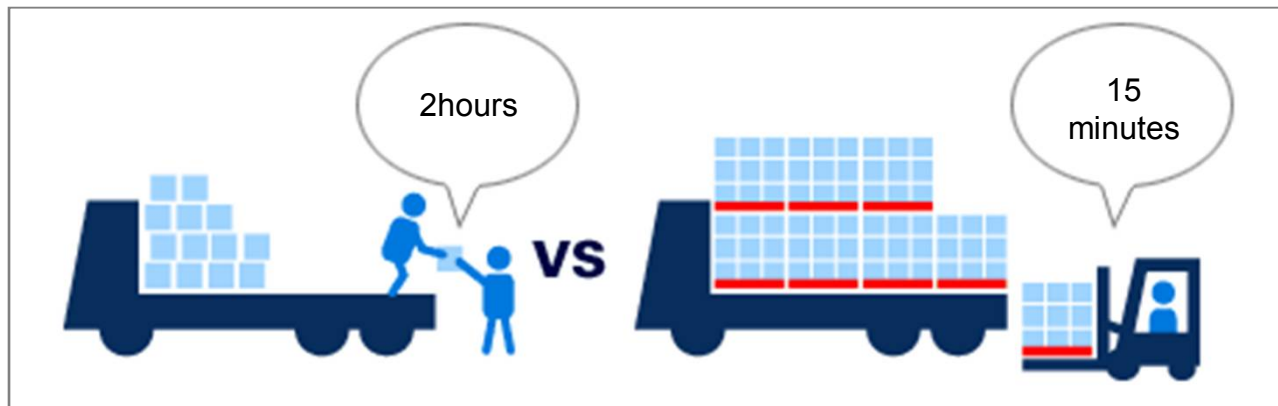
# Standardization of distribution material / equipment

## Environmental improvement by standardizing distribution material / equipment: container, palette, carton

- Low-carbon emission by improving logistics efficiency
- Reduction of waste due to the fewer accidental product damage during transshipment
- Reduction of natural resource usage by increasing returnable rate



### Efficient Logistics by using palettes



Source: Japan Palette Rental Corporation

# Solution to reduce environmental burden in logistics



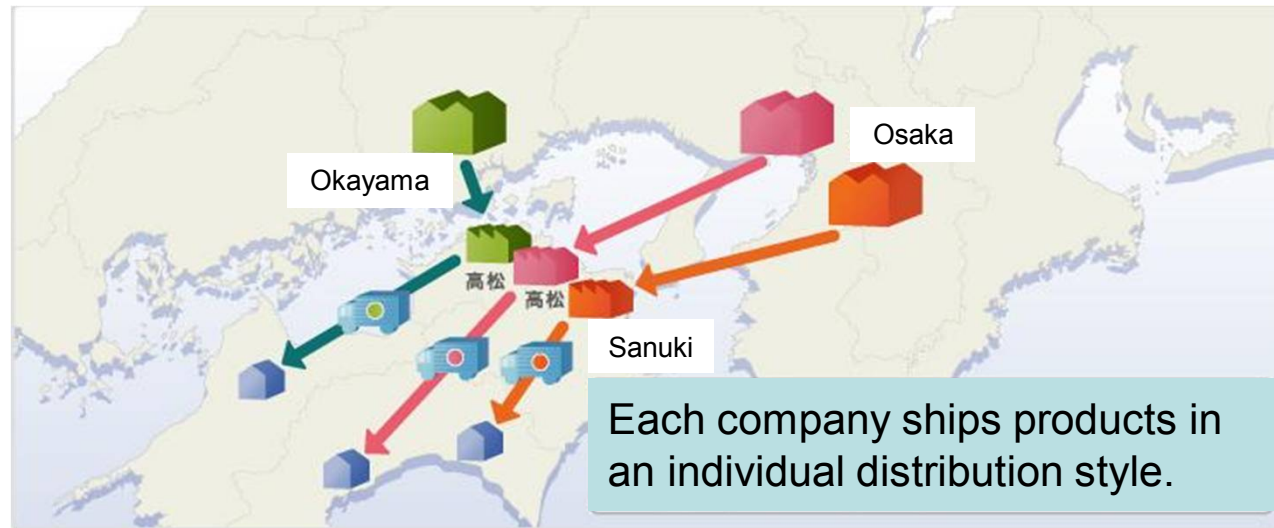
## Business model

Method	Purpose	Effect
<b>Full truckload shipment (Joint shipment)</b>	Delivery by consolidating freights from various manufacturers to make it full truckload	<ul style="list-style-type: none"> <li>- Reduction of the number of shipments</li> <li>- Efficient operations of freight receiving</li> <li>- Reduction of carbon emissions</li> </ul>
<b>Construction of Transfer Centers (TC)</b>	Build TC's to receive goods from manufacturers and sort those goods for shipment of such products mainly as grocery, fresh products and so forth to each of retail store	<ul style="list-style-type: none"> <li>- Reduction of the number of freight receiving and shipments</li> <li>- Efficient operation of receiving goods from manufacturers</li> <li>- Reduction of carbon emissions</li> </ul>
<b>Modal shift</b>	Modal shift in transportation of cargo from road to rail or sea transportation	<ul style="list-style-type: none"> <li>- Reduction of delivery cost</li> <li>- Reduction of carbon emissions</li> </ul>
<b>Recycling-oriented logistics (reverse logistics)</b>	Collection and delivery of recycling materials effectively to build Recycling-Oriented Society	<ul style="list-style-type: none"> <li>- Reduction of carbon emissions</li> <li>- Utilization of recycling materials</li> </ul>

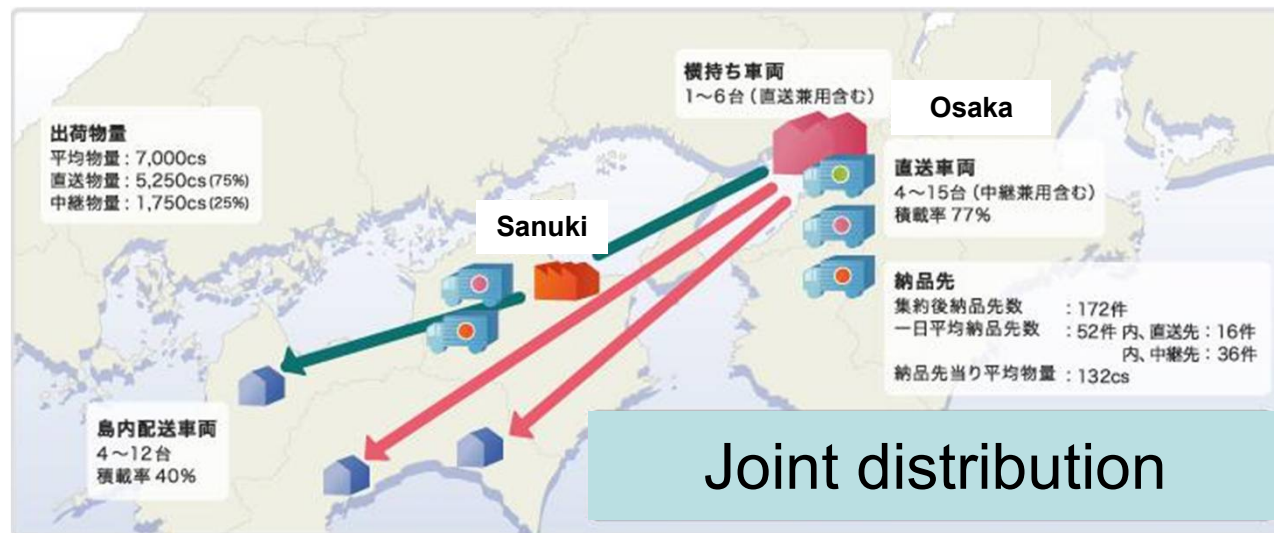


# Case of Full truckload distribution (Joint distribution)

Before



After



Source: Logistic Planner, Inc.

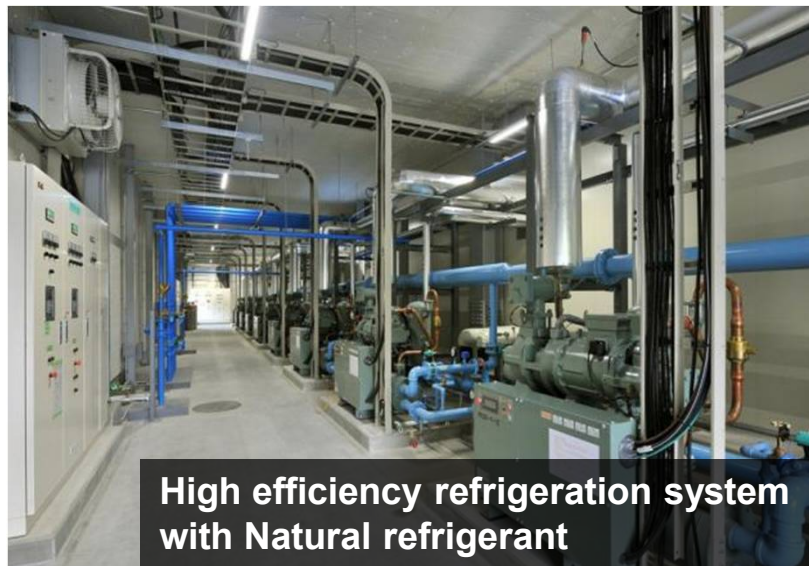
# Solution to reduce environmental burden in logistics



## Facility & Equipment

Method	Purpose	Effect
<b>“Top-Runner Method”</b>	Setting a standard of high efficiency energy consumption by designating 26 appliances such as light-emitting diode (LED) to head for a further improvement	- Saving of electricity cost - Reduction of carbon emissions
<b>“CASBEE System”</b>	Utilizing the system to comprehensively evaluate environmental efficiency of the buildings in terms of energy saving, environmental burden, structural functionality, landscape, and etc	- Building of sustainable architecture
<b>Photovoltaic(PV) Power System</b>	Utilizing appliances such as solar panels on the roof of a distribution center or a refrigerated warehouse to supply solar electricity	- Saving of electricity cost - Reduction of carbon emissions
<b>Natural refrigerant equipment</b>	Utilizing the most eco-friendly refrigerant such as ammonia which has low global warming impact	- Reduction of carbon emissions - High energy efficiency
<b>Recycling pallets</b>	Utilizing such pallets made of recycled polyethylene resin	- Reduction of carbon emissions - Support for Recycling-Oriented Society
<b>“Stand-alone power system” (not in service now)</b>	Installing stand-alone power system at a parking lot to supply electricity to vehicles	- Prevention of global warming or air pollution

# Case of environmentally efficient facility/equipment



High efficiency refrigeration system with Natural refrigerant



Cargo handling area



Photovoltaic(PV) Power System



LED Lighting

# Solution to reduce environmental burden

## Vehicles

Method	Purpose	Effect
<b>Hybrid vehicle</b>	Utilizing such a vehicle as equipped with 2 kinds of different sources of power	<ul style="list-style-type: none"><li>- Saving fuel consumption</li><li>- Reduction of carbon emissions</li></ul>
<b>3 separated-van body vehicle</b>	Dividing van body with 3 separated rooms to keep them at different temperature in delivery	<ul style="list-style-type: none"><li>- Reduction of the number of shipments</li><li>- Reduction of carbon emissions</li></ul>



Natural gas car



Source: Logistic Network, Inc.



## 4. Actual Cases

### -Saving Food Losses / Wastes-

#### Cooperation to the Food Bank

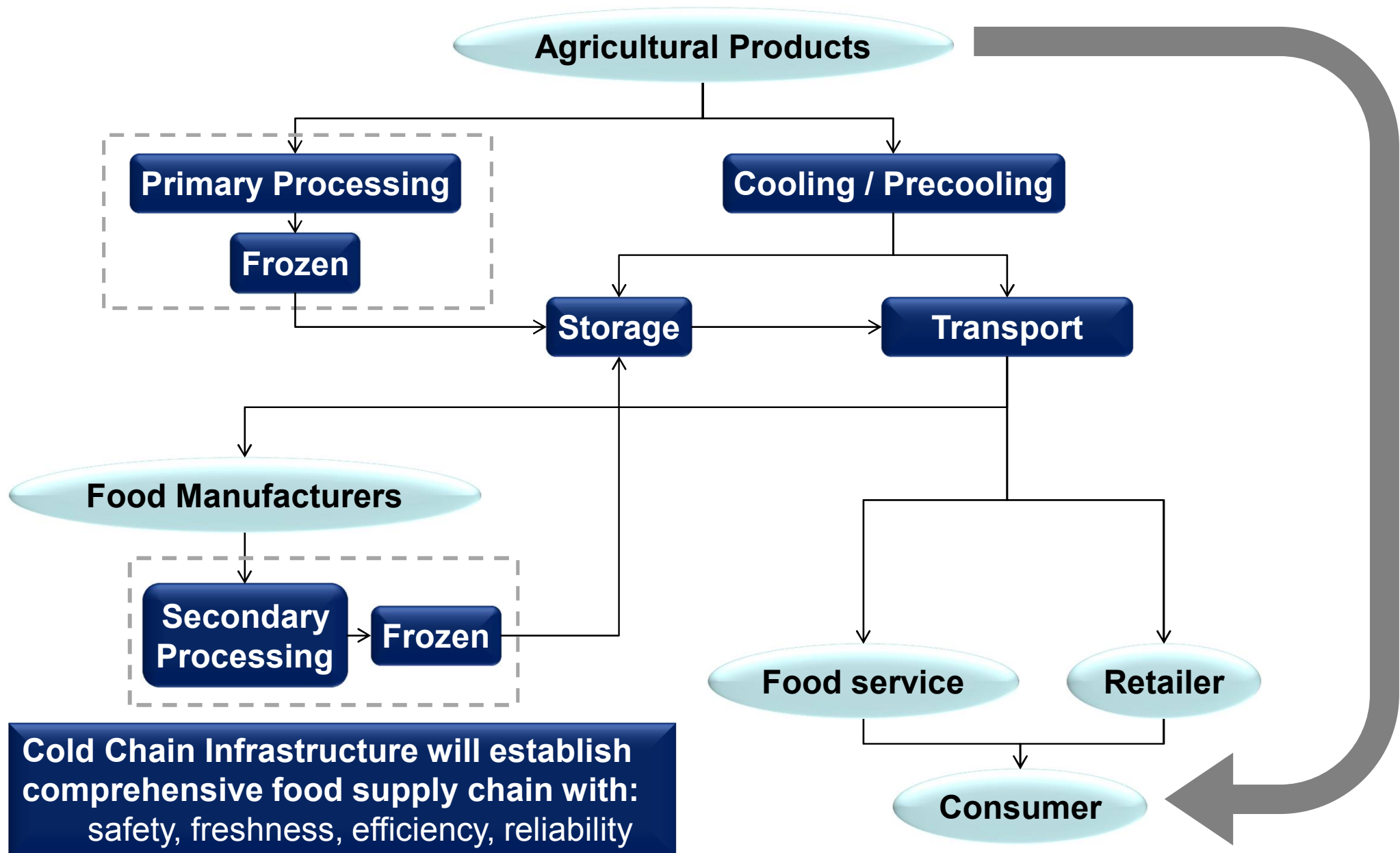
Nichirei acts to make effective use of food without wasting it.

Since July 2005, Nichirei Foods has been providing support for the Food Bank activities of Second Harvest Japan, an non-profit organization . An employee of Nichirei Foods in the U.S. office was very impressed by the Food Bank activities that were widely operated in the U.S. and reported it to Tokyo H.O. Tokyo H.O. also showed an keen interest in cooperating with this activity and sought a partner. It then found Second Harvest Japan and formed a partnership. Nichirei Food offers free of charge those frozen food products which have no quality problems but can not be sold in general markets due to damages and deformation in cartons during transportation and handlings. With the help of Nichirei Logistics Group, Nichirei Foods makes direct delivery under refrigerated condition to nursing homes, orphanage and other facilities in the name of Second Harvest Japan.



An example of broken cartons of French fry products which are not good for commercial use

# Cold Chain & related industries





# Frozen foods: Solution provider to change diet style



- **Storage**  
to eat at any time
- **Reducing food waste**  
to cook necessary amount
- **Nutrition control**  
to keep health balance
- **Easy cooking**  
to save time



- **U.S.: USDA and EPA Launched “U.S. Food Waste Challenge”**
  - calling on others across the food chain—including producer groups, processors, manufacturers, retailers, communities, and other government agencies
  - to join the effort to reduce, recover, and recycle food waste
- **France: Carrefour launched “Pledge on Food Waste”**
  - 16/7/2013 released by Carrefour
- **Japan: “Food-loss challenge project” was launched, January 2013**

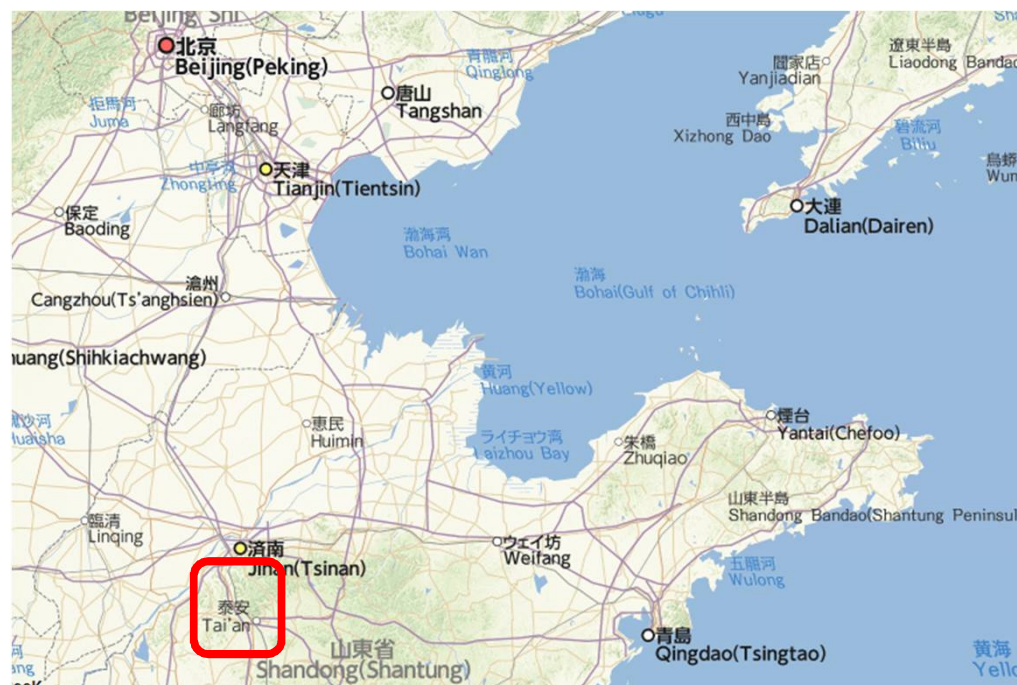
- **U.K.: Sales of frozen foods in the past year had leapt by 14 per cent, because shoppers were trying to save cash and cut waste.**
  - 22/Jul/2013 “The Telegraph”, UK
- **U.S.: Energy and Environmental Affairs (EEA) officials today announced a proposed commercial food waste ban and funding to support anaerobic digestion (AD), a process that converts food waste into renewable energy.**
  - 10/Jul/2013 “Commonwealth of Massachusetts”, USA

- **Japan: “One-Third Rule” -More than 30 food companies, wholesalers and convenient store chains started a test this month a test with the support of the farm ministry and other government bodies to reduce “food loss.”**
  - 27/Aug/2013 “The Japan Times”, Japan
- **China: The National Development and Reform Commission (NDRC) formulated “the Agricultural Products Cold Chain Logistics Development Planning”.**
  - 29/Jul/2010 released by Ministry of commerce, China

# <NF Case> Frozen produce business in China

## Frozen produce business – Enabled by Cold Chain

- ✓ Cultivating produce in large plots of farmland with annual schedule of crop-rotation
- ✓ Managing rigid control of agrichemicals and cultivation in large-scale farmland
- ✓ Preserving nutrients of produce by quick freezing after harvest
- ✓ Enabling year-round supply out of storage by freezing produce
- ✓ Exporting frozen fresh produce to Japan

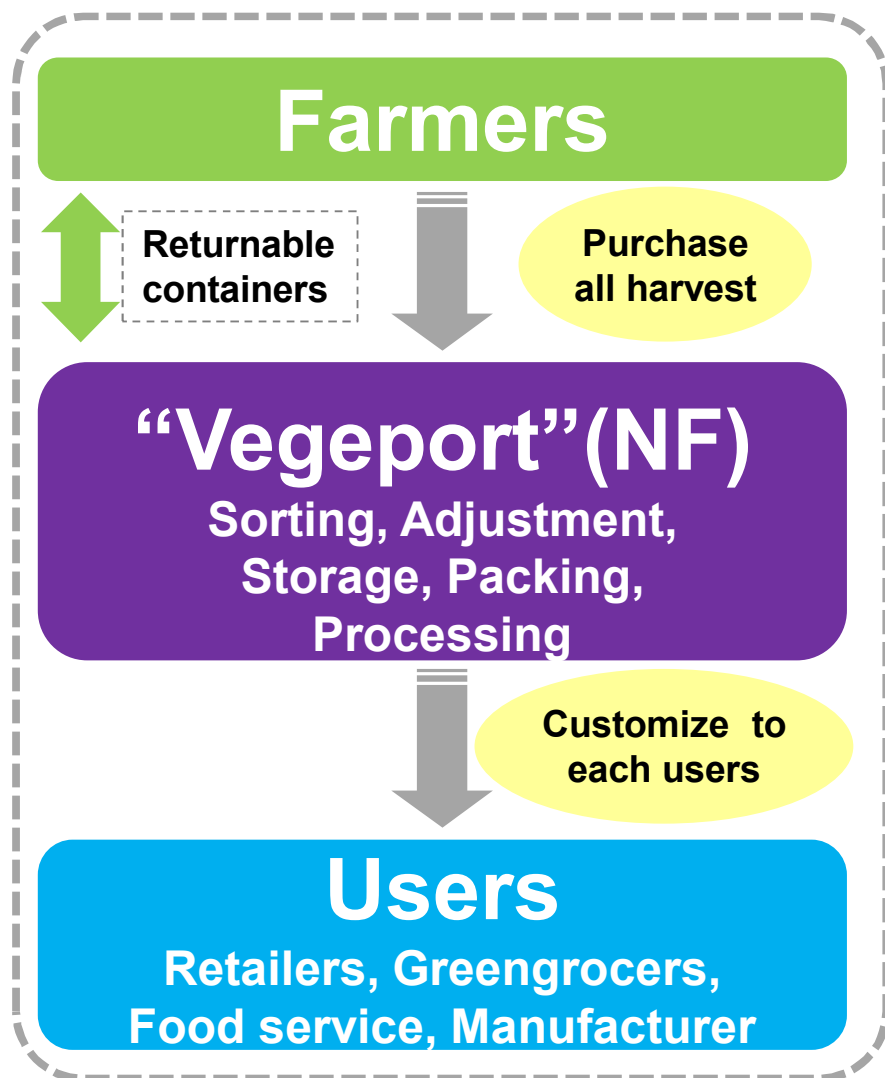


### “Taian Jiayu Foodstuff Company Limited”

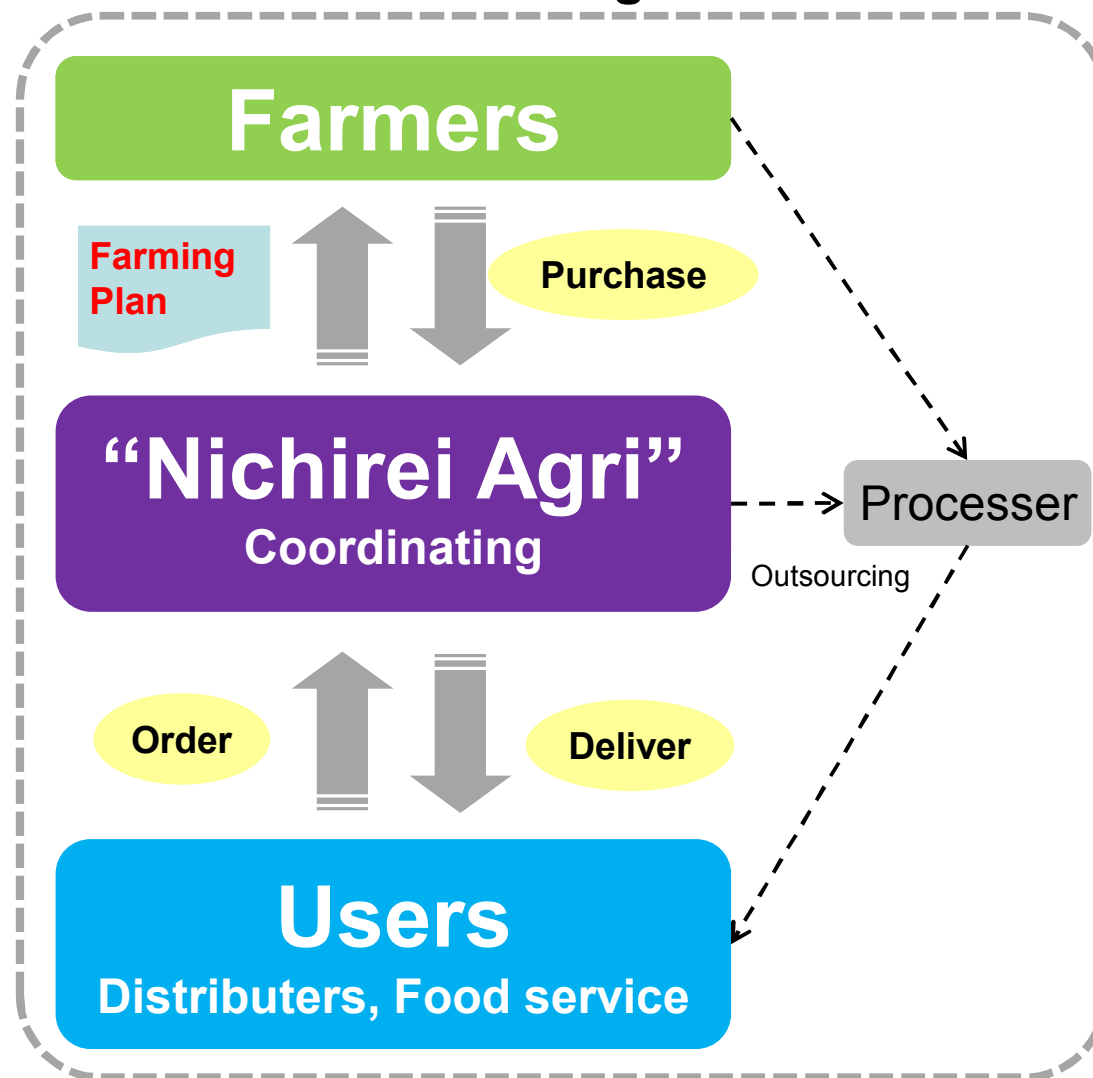


# <NF Case> Agri-Business Models of Local Farm

## Distribution and Processing Complex Model



## Local Consumption Coordinating Model



# <NF Case>Acerola Business in Brazil



## Nichirei, Brazil (since 1978)

- Processing facilities
- Training of local farmers
- Frozen processing technology
- Breeding / R&D of Vitamin-C acerola species



## Acerola fruits in Brazil

- Rich Natural Vitamin C  
(Contain 34 times of a lemon)
- Perishable & Delicate

## Worldwide Market (since 1985)

- Japan, EU, Asia
- Health Conscious
- Demand for Natural Vitamin C

18,000km

## Cold Chain Infrastructure



Training class to farmers

## Creation of New Business

- Cultivation & Frozen Processing in Brazil
- Worldwide sales of Processed Acerola Fruits



Acerola Fruits

## Cold Chain Infrastructure – Achieving the goals of two Declarations

### Shared Goals

#### NIIGATA Declaration

1. Sustainable development of the agricultural sector
2. Facilitation of investment, trade and markets

#### KAZAN Declaration

1. Increasing agricultural production and productivity
2. Facilitating trade and developing food markets
3. Enhancing food safety and quality
4. Improving access to food for socially vulnerable groups of population
5. Sustainable ecosystem management, and anti-illegal fishing

### Cold Chain Infrastructure

- ✓ Increasing farm productivity
- ✓ Increasing income for farmers
- ✓ Increase of food export
- ✓ Developing food industry
- ✓ Improving hygiene and nutrition
- ✓ Reducing food losses
- ✓ Sustainable food supply chain

# **Thank You Very Much for Your Attention!**



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Economic Cooperation**