Cold Chain Infrastructure and related Industries
- Contribution to food losses / waste reduction -

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

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 2nd 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
Rapid Growth of World Population
- 2011: 7 billion       2050: 9 billion

Starving and Malnourished people
- World: 900 million people are starving
- South-East Asia: 64.5 million of people undernourished*
  *Source: FAO “The state of food insecurity in the world 2013

Food Losses & Waste
- About 1.3 billion tons a year in the world
- 1/3 of total food production in the world
- Largest for fruits & vegetables (Around 20% at Producing Level)
- Substantial gaps in knowledge throughout the food chain
- Loss reduction as an important option to increase food availability

Source: Save Food Congress, Dusseldorf, 16 May 2011
Prevalence of undernourishment in South-Eastern Asia

Number of people undernourished

Proportion of undernourished in total population

Source: FAO “The state of food insecurity in the world 2013”
Causes of Food Losses & Waste by Region

Per capita food losses and waste, at consumption and pre-consumptions stages

Developed Economies

Emerging Economies

Latest Initiative – 5th June, 2013

USDA/EPA launched the 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.

Awareness of Communities

Need for Cold Chain Infrastructure

- Poor storage facilities
- Lack of refrigeration
- Lack of primary processing facilities
- Poor transportation
- Inadequate market system and facilities
- Poor packaging

Source: FAO “Global Food Losses and Food Waste”, 2011
Development of Food Supply Chain in Japan

### Logistics

- **Cold Logistic Network:**
  - Individual Logistics
  - Joint logistics

- **Cold Storage:**
  - Storing seafood at ports
  - Distribution centers close to consumers

- **Key Dates:**
  - 1960: Liberalization of import of 12 Agri Products
  - 1965: Liberalization of import of pork
  - 1967: Liberalization of import of pork

### Wholesale

- **Public Wholesale Markets:**
  - Declining by increasing direct trading

### Manufacturing

- **Frozen Processed Food:**
  - Peaking

- **Key Dates:**
  - 1955: Joined GATT
  - 1964: Tokyo Olympic
  - 1985: 3 deliveries/day

### Retail & Consumers

- **1957:** 1st super market (Daiei) in Japan
  - FY2011: Total Sales 12 trillion JPY

- **1971:** 1st McDonald's shop in Japan
  - 2011/2: 3286 shops

- **1974:** 1st CVS in Japan
  - FY2011: Total sales 9 trillion JPY

- **1991:** Liberalization of Import of Beef

### Legal Events

- 1977: Law on the Territorial Sea
- 2010: Law of Food Recycling

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*High Economic Growth – Food Loss at Supply-side*

*Slow Growth – Food waste at Demand-side*
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

Source: Science and Technology Agency, Resources Research Council, 1965
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PPP scheme in building Cold Chain Infrastructure in Japan
Development of Cold Chain Infrastructure in Japan

Trends in Capacity of Cold Storage Warehouses

- More than doubled in 30 years (1972 – 2000)
- Change of location: From “near the port sites” to “closer to consumers”

Source: Japan Association of Refrigerated Warehouses

1965 “Admonishment of Cold Chain”
**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

- Domestic Production - Frozen Processed Foods
- Imported Frozen Processed Foods
- Imported Frozen vegetable

Agricultural products import:
1960: 1.7 billion USD
2010: 53.6 billion USD

Source: Japan Frozen Food Association

1965 “Admonishment of Cold Chain”
Cold Chain & related industries

Agricultural Products

- Primary Processing
  - Frozen

- Cooling / Precooling
  - Storage
  - Transport

Low Temperature Logistics

Food Manufacturers

- Secondary Processing
  - Frozen

Food service

Retailer

Consumer

Cold Chain Infrastructure will establish comprehensive food supply chain with: safety, freshness, efficiency, reliability
Nichirei’s Food Manufacturer business

Provide solutions as Manufacturer of Frozen Processed Food

- **Storage**
  to eat at any time

- **Reducing food waste**
  to cook necessary amount

- **Nutrition control**
  to keep health balance

- **Easy cooking**
  to save time
Benefits from Cold Chain Infrastructure

Historical Development:
Creating added value of food industry / Enhancement of cold chain infrastructure

- Cold storage closer to consumer
- Flexible nationwide logistic network
- Cold storage at port site / closer to farm producers
- Individual logistic by farm producers

1. Growth of food industry
2. Development of food manufacturing industry
3. Enhancement of food safety / nutrition standard
4. Stable balancing of food supply / demand
5. Increase in farm productivity / income
6. Increase in farm exports
7. Reducing food losses
8. Modernizing of retail / food service
9. Broader choice of foods and meal occasion

Added Value

High

Low
Development of Social Infrastructure

Trends in electric generation capacity - Japan

Source: METI “Energy White Paper”
Development of Social Infrastructure

Highway Network throughout Japan

Total road length: 7,802.6km
Seismically Isolated Cold Storages

Building facilities with a structure designed to absorb quake

Conventional buildings
Seismically isolated buildings

Source: The Japan Society of Seismic Isolation
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

Alert of abnormal signal

In-vehicle dynamic monitoring terminal

Application: frozen foods, medicines, cosmetics, precision instruments

Source: Hitachi, Ltd.,
Minimizing post-harvest losses is “Critical” for emerging economies

Sharing developed economies’ technology innovated in the past to save food losses in emerging economies

Proposed Solution: Public Private Partnership

**Public Sector**

- Infrastructure
  - Roads
  - Markets
  - Energy (e.g. electricity)

- Public Awareness
  (e.g. Education)

**Private Sector**

- Facilities
  - Cold Temperature Logistic
  - Frozen Processed Plant
  - Freezer at Retail Stores

- Management of Operation
Cold Chain Infrastructure – Achieving the goals of two Declarations

Shared Goals of APEC

**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!