

Strategies for Improving Cold Chain Logistics and Infrastructure

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Presentation Outline

- 1. What is Cold Chain Logistics and Its Benefits**
- 2. Improving Food Security, Food Loss & Waste via Cold Chain Logistics**
- 3. The Future of Meat Industry: Trends and Challenges**
- 4. Strategies for Improving the Cold Chain Infrastructure**





What is Cold Chain Logistics and Its Benefits?

Logistics Definition

What is Logistics ?

Logistics is the management of the flow of goods from origin to destination to meet customer requirements

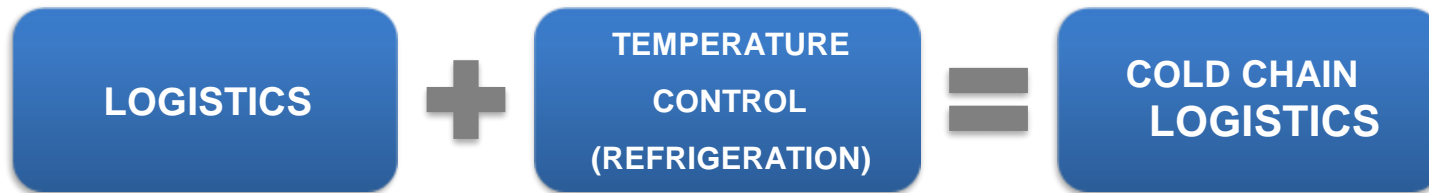
**Right Time, Right Place
@ Minimum Cost**

**Started as a business
concept in 1950's**



Source: Global Agri System Pvt. Ltd. Report

What is Cold Chain Logistics?



Major Sectors : Food and Beverages, Bio-Pharmaceutical

The Cold chain logistics infrastructure



Cold Chain in Food Sector



Industry Temperature Standards

Banana

13 C

Chill

2 C

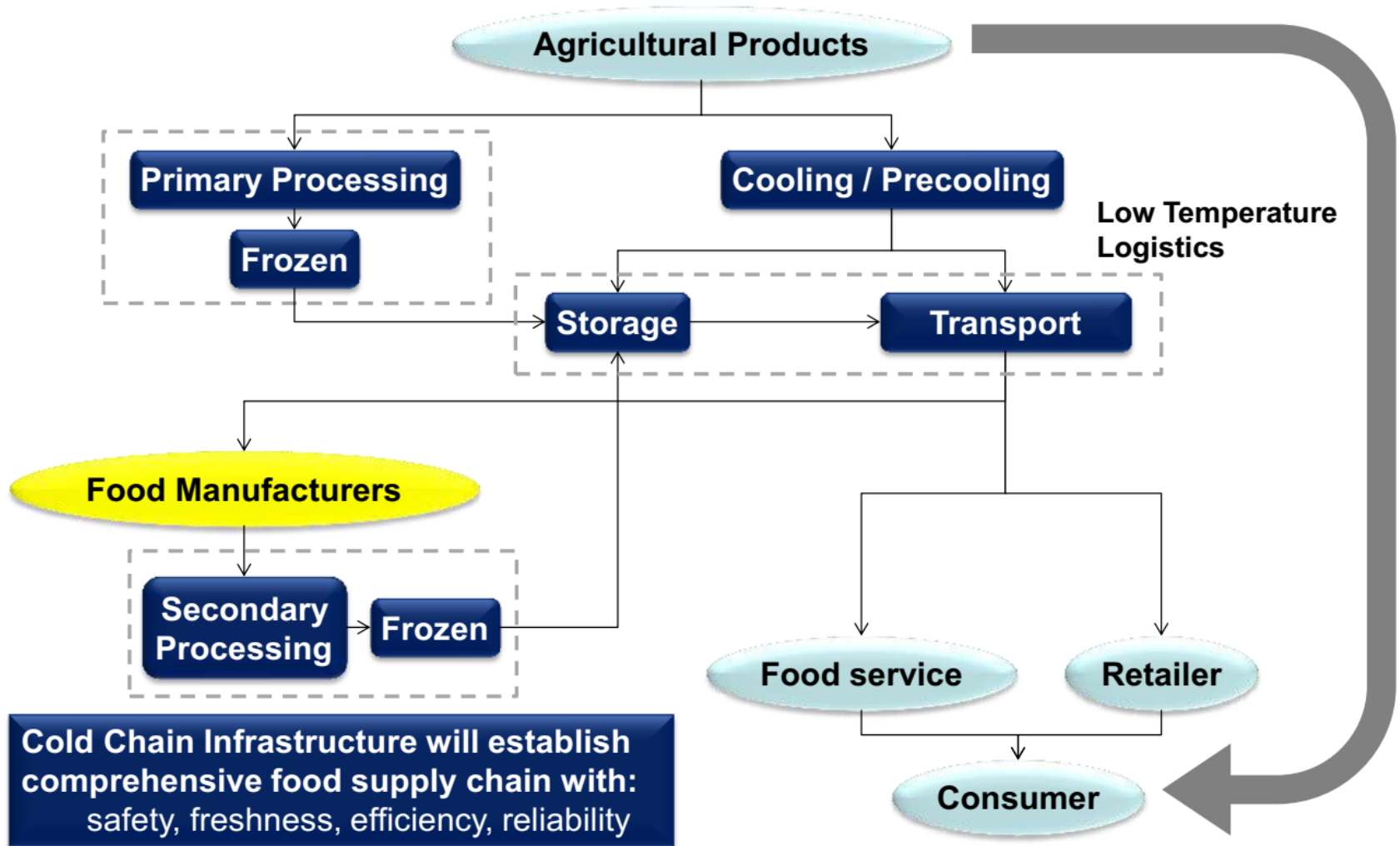
Frozen

- 18C

Deep Frozen

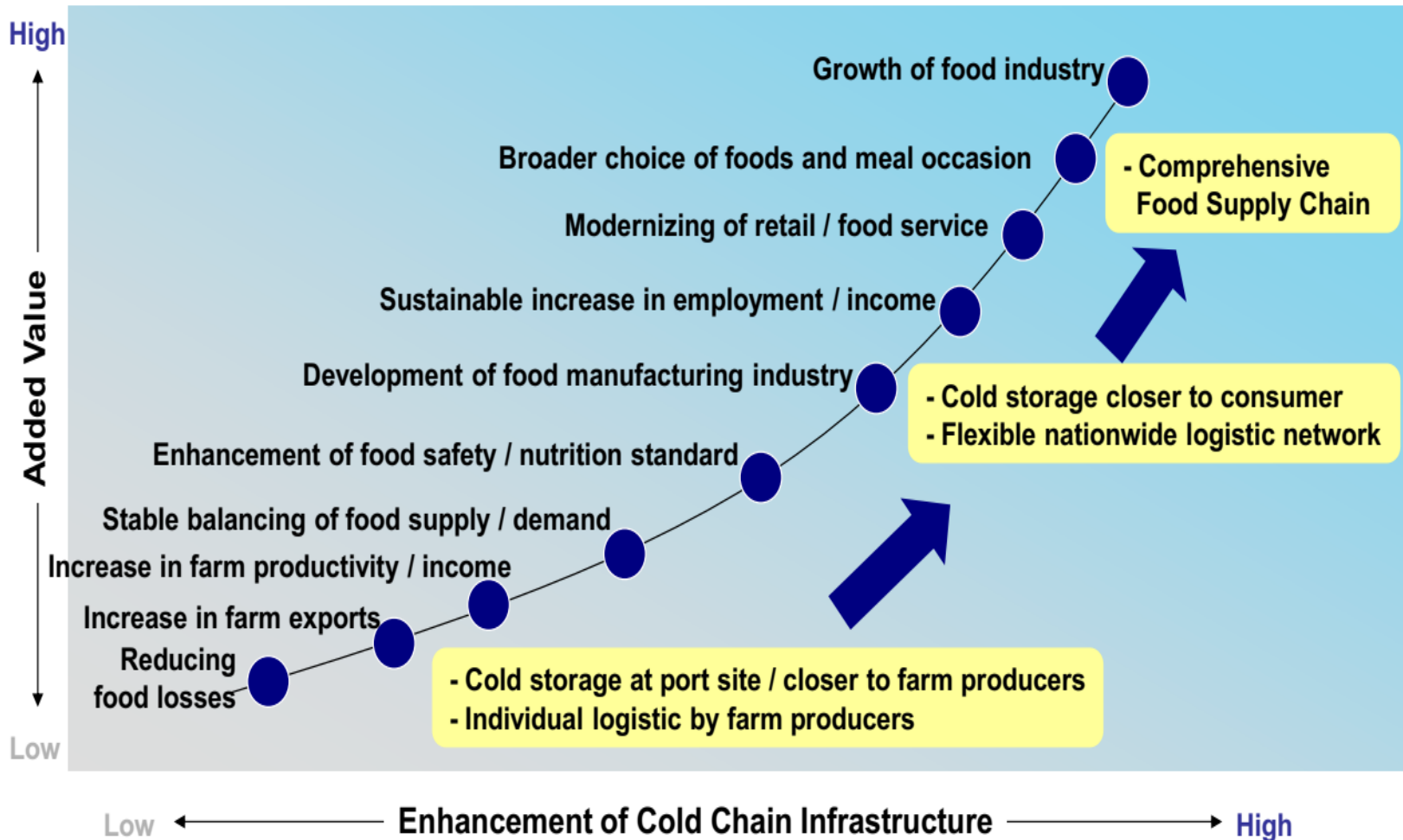
- 29 C

Cold Chains and Related Industries



Source: Nichirei Corporation, 2013

Benefits of Improving Cold Chains



The Benefits of Improving Cold Chains

ENVIRONMENTAL PROTECTION

Emission reduction

Efficient use of valuable raw materials /resources

Reduced pollution and toxic waste

ECONOMIC DEVELOPMENT

Green Economy
-> economic opps for entrepreneurs & manufacturers

Energy and cost savings

Increased incomes for producers and lower food costs
-> net economic benefits

SOCIAL BENEFITS

Improved food security

Improved nutrition and health

Employment / skills

Source: GTZ, 2016

The slide features a white background with decorative geometric shapes. A dark grey triangle is in the top-left corner, and a light grey triangle is in the top-right corner. A light grey triangle is in the bottom-left corner, and a blue triangle is in the bottom-right corner. The text is centered in the white space.

Improving Food Security, Food Loss & Waste via Cold Chain Logistics

What is Food Security?

There are many different definitions of food security. The definition below is frequently used.

The World Food Summit of 1996 defined food security as existing “**when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life**”.

What is Food Security?

Food security includes the following aspects:

Availability

Access

Affordability

Quality

Nutrition

Safety

Global Food Security Index (GFSI) Indicators



- Food consumption as a share of household expenditure
- Proportion of population under global poverty line
- Gross domestic product per capita
- Agricultural import tariffs
- Presence of food safety net programs
- Access to farmer financing

Affordability



- Sufficiency of supply
- Public expenditure on agricultural R&D
- Agricultural infrastructure
- Volatility of agricultural production
- Political instability

Availability



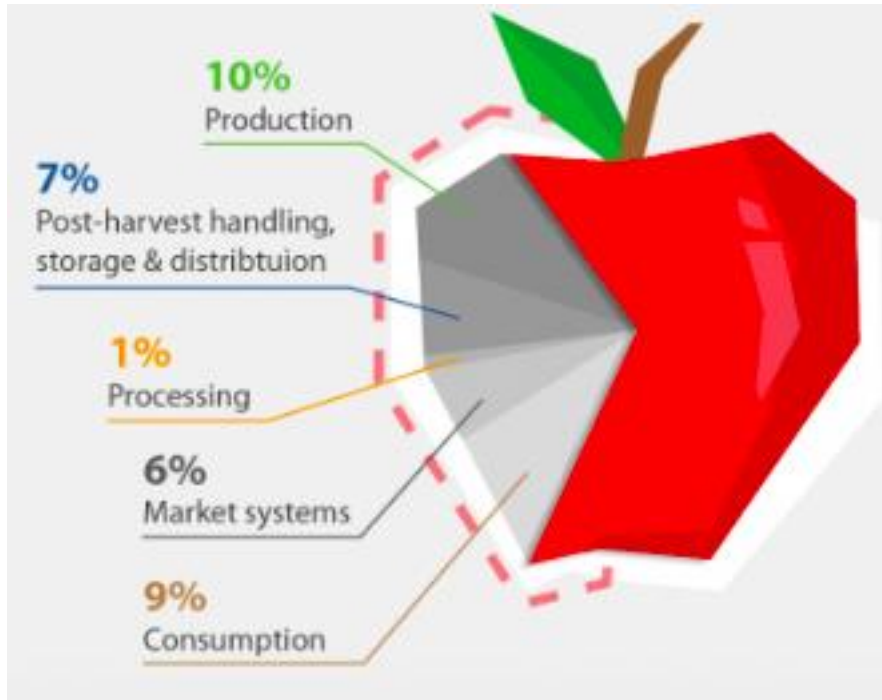
- Diet diversification
- Nutritional standards
- Micronutrient availability
- Protein quality
- Food safety

Quality & Safety

What is Food Loss and Food Waste (FL&W)?

- **Food loss** refers to food that is intended for human consumption but, through poor functioning of the food production and supply system, is reduced in quantity or quality.
- **Food waste** refers to food for human consumption that is discarded (both edible and inedible parts) due to intentional behaviors. “Food waste” often refers to what occurs along the food chain from the retail store through to the point of intended consumption.

Size of FL&W

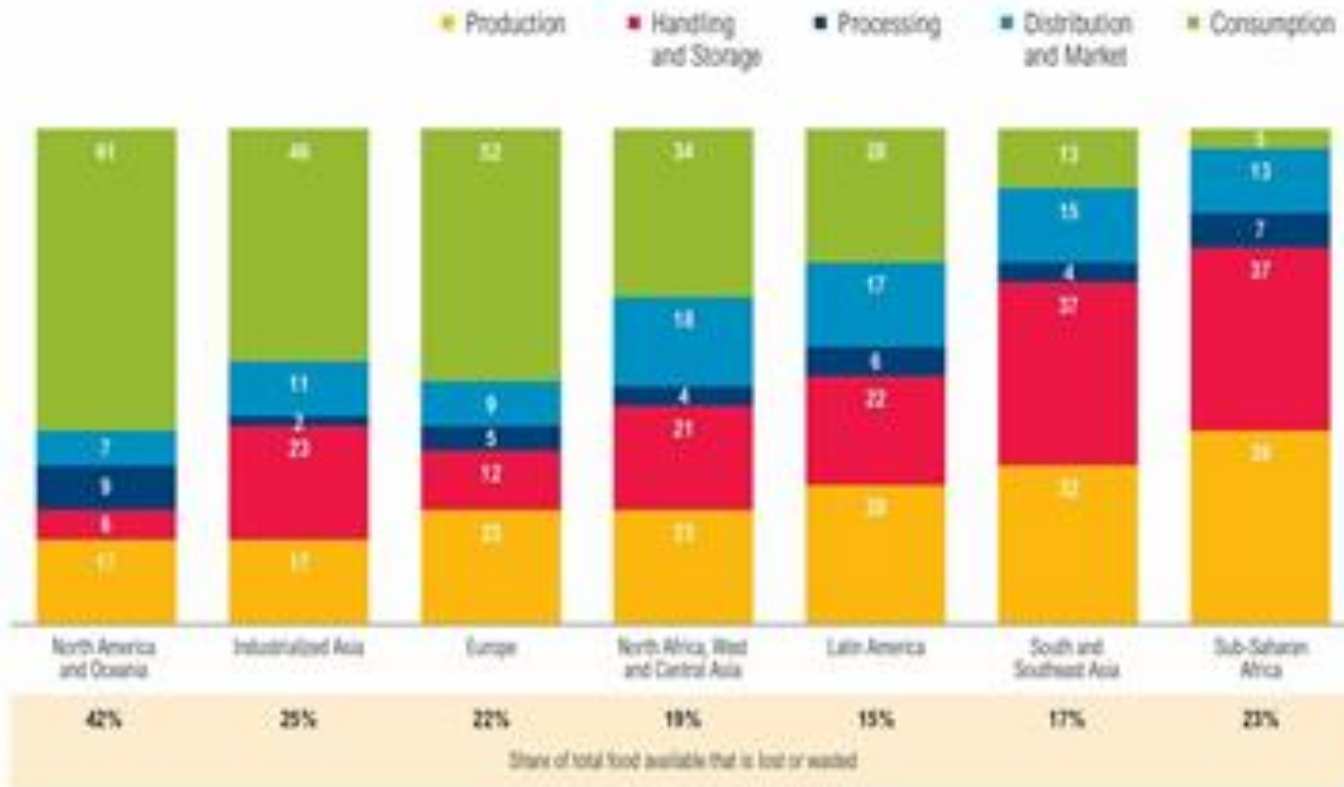


Field to plate
how $1/3^{\text{rd}}$ of global
food is lost and
wasted?

Source: WRI analysis based on FAO, 2011

Causes FL&W

Near the Plate VS Near the Field



Note: Number may not sum to 100 due to rounding.

Source: WRI analysis based on FAO, 2011. Global food losses and food waste—extent, causes and prevention. Rome, UN FAO.

Causes FL&W

Developing Countries

- Lack of investment in farm equipment (harvesters, threshers, etc.)
- Lack or even absent packaging at farm before distribution
- Lack of cold chain infrastructure
- Low levels of processing

Developed Countries

- Supply > demand
- High expectation of 'quality standards appearance'
- Failure to comply with food safety standards
- Lack of understanding on date marking rules

Causes and Remedies F&L in Developing Countries

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



Need for 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



The Future of Meat Industry: Trends and Challenges

Trends

Population growth

Income growth →
Rising numbers of
middle-income

Urbanization

Availability,
accessibility and
affordability

Low price compared to
other meats

Fewer but larger farms

Better poultry meat marketing:

- Quality and consistency
- Differentiation and segmentation
- Convenience
- Safety and shelf-life

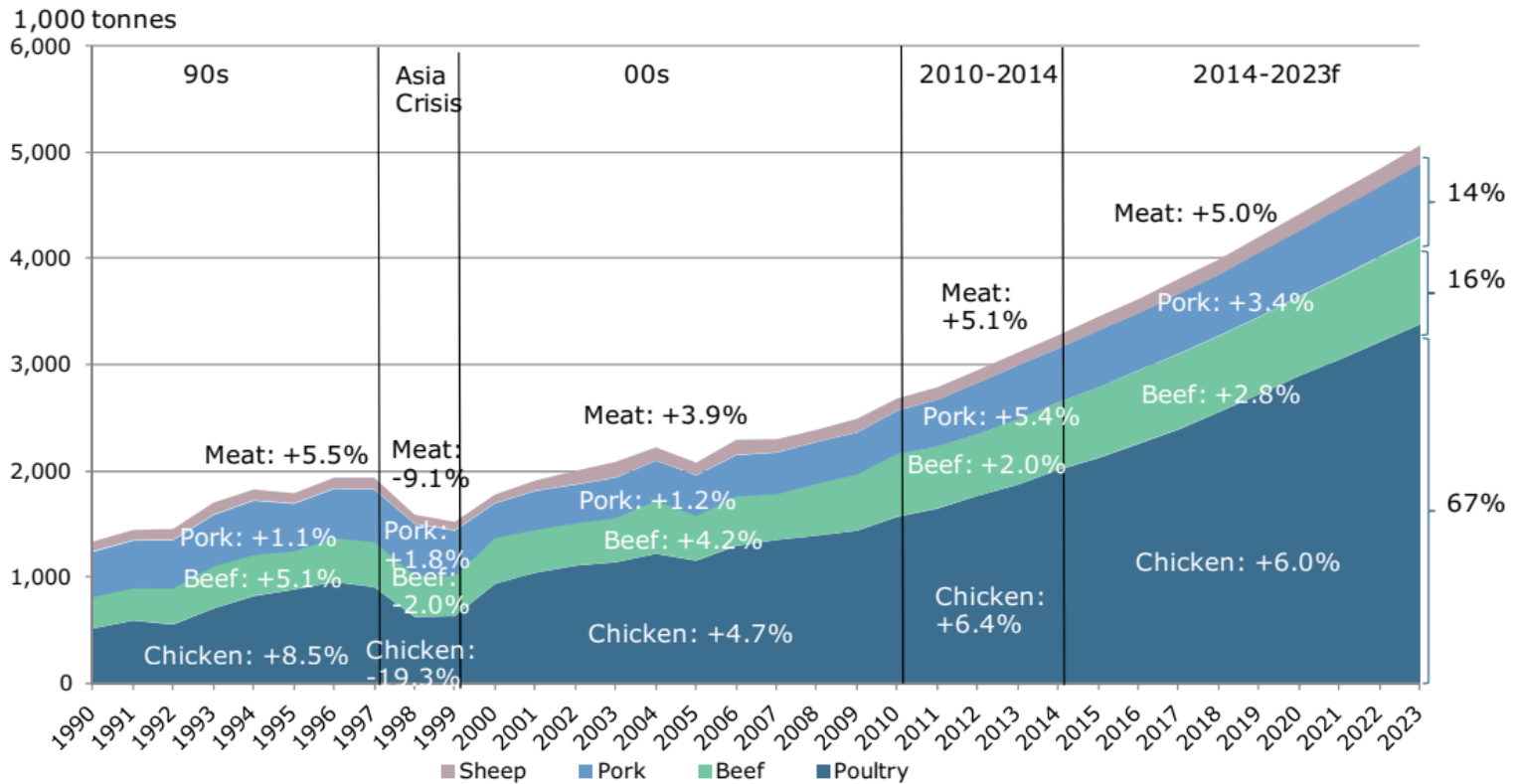
Challenges

- Globalization of industry
- Resource scarcity
- Animal welfare
- Global climate change
- Food loss and waste
- Over supply → Price instability
- Poultry import threats
- Higher feed prices

- Exchange rate volatility
- Animal disease
- Low productivity
- Lack of storage, cold chain and transport
- Supply of quality feed
- Quality standards for farm management
- Lack of processing facilities

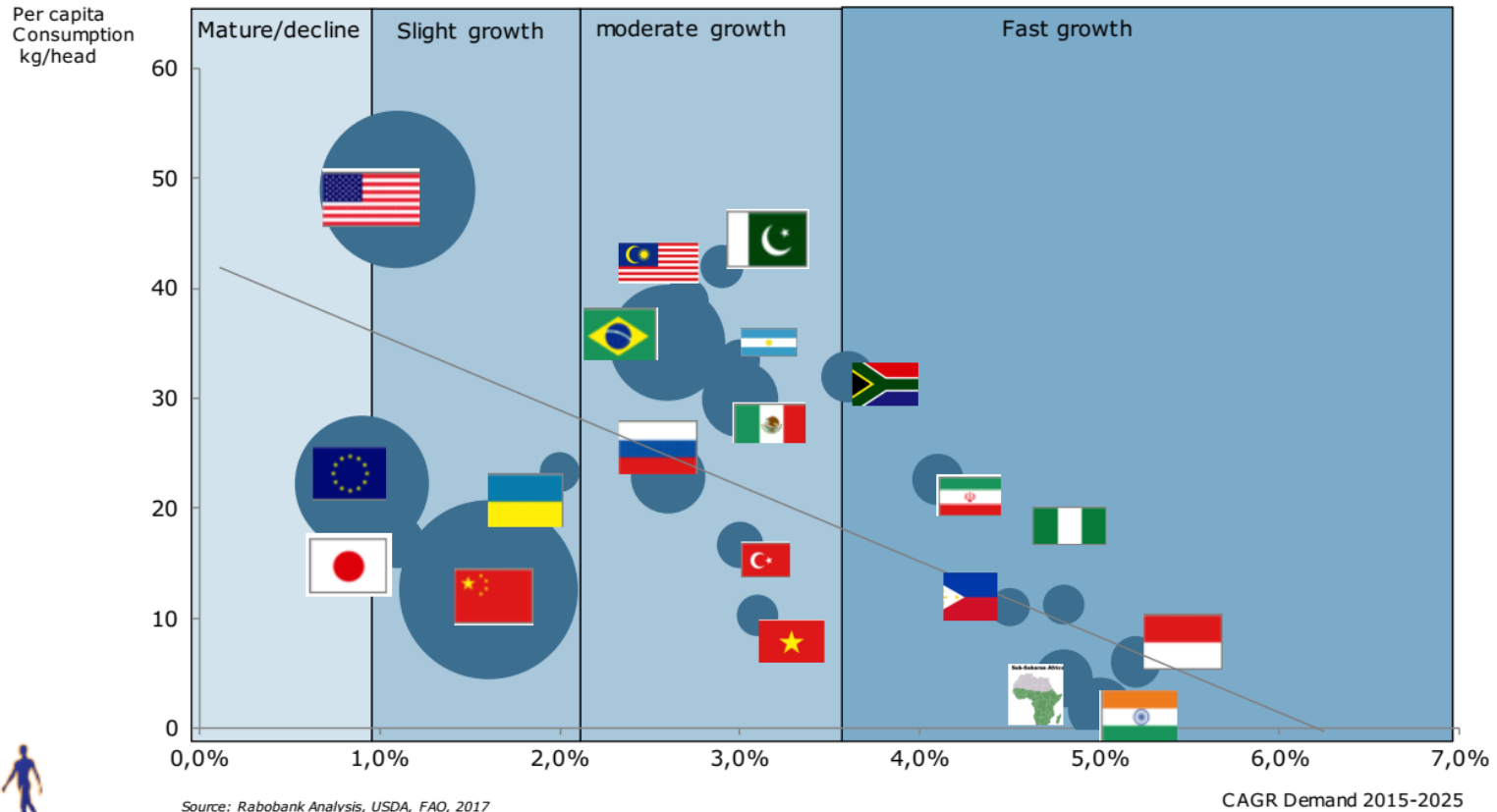
Future of Indonesian Meat Market

Poultry the protein of choice and the fastest growing market
Future: Ongoing growth, but slower than in the past.



Poultry Growth in Asia, Saturated in Emerged Market

Global poultry market growth outlook 2015-2025

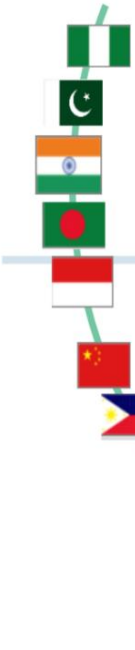


Stages of Poultry Industry Development

ECONOMIC TAKE-OFF
Food as a need

Income: < \$ 5,000

Location Bound



Time free



Time bound

ECONOMIC REINVENTION
Food as stimulation

Income: > \$40,000

Location free



Income: \$ 5,000 - \$15,000

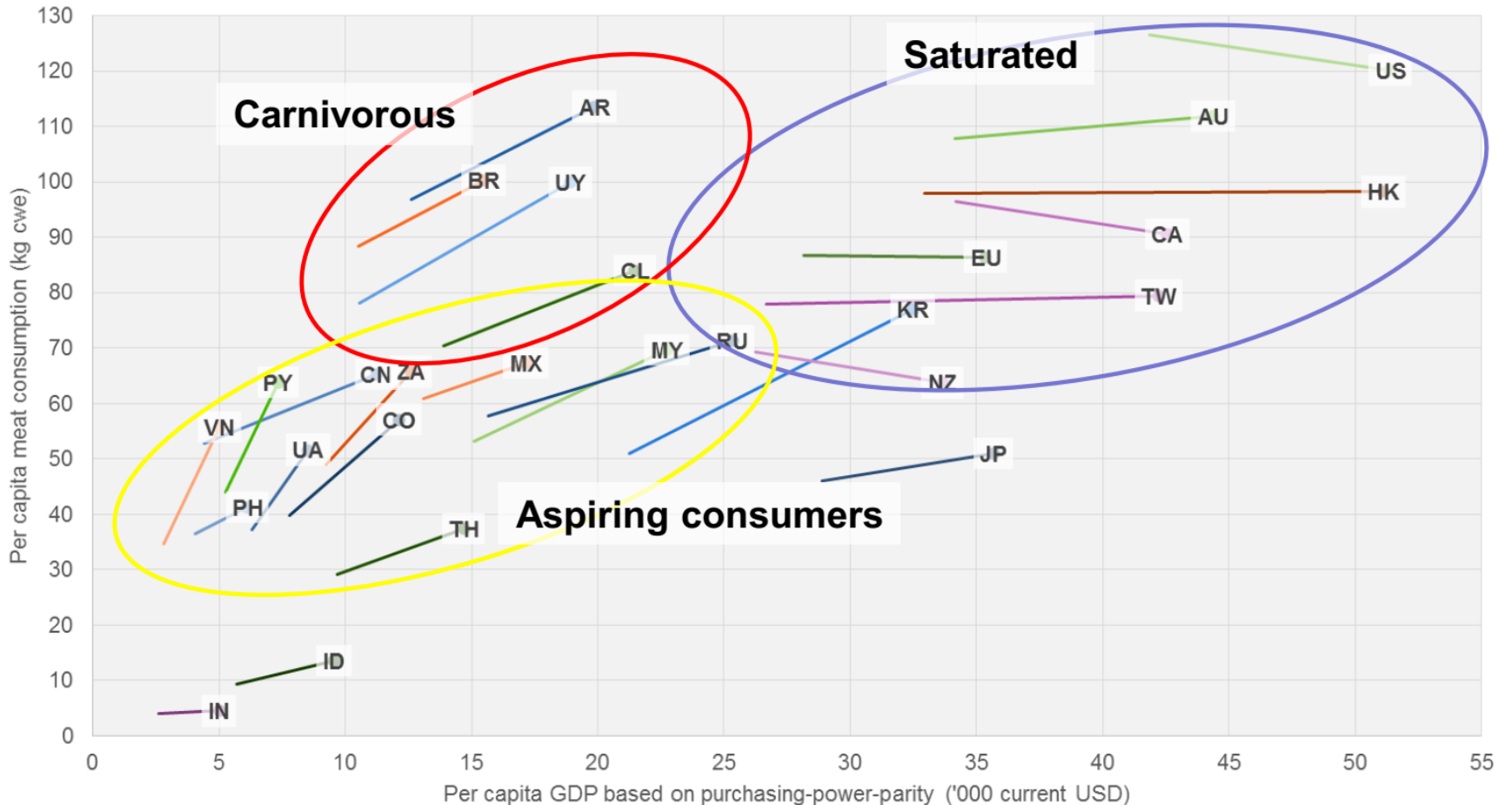
Income: \$15,000 - \$40,000

ECONOMIC DEVELOPMENT
Food as a social occasion

ECONOMIC CONSOLIDATION Food as nutrition/well-being

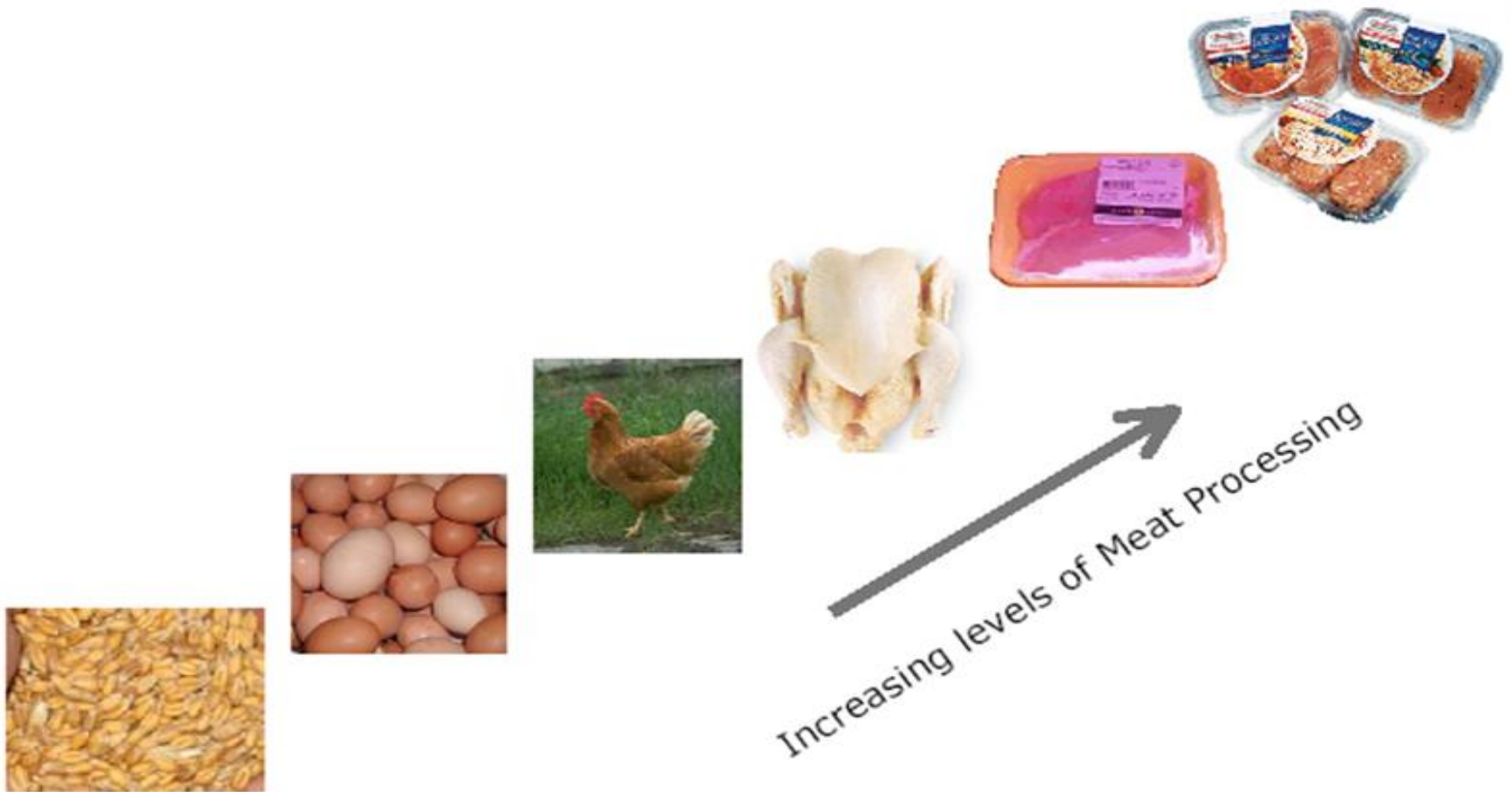
Source: Rabobank analysis, 2017

Per Capita GDP (PPP) and Meat Consumption



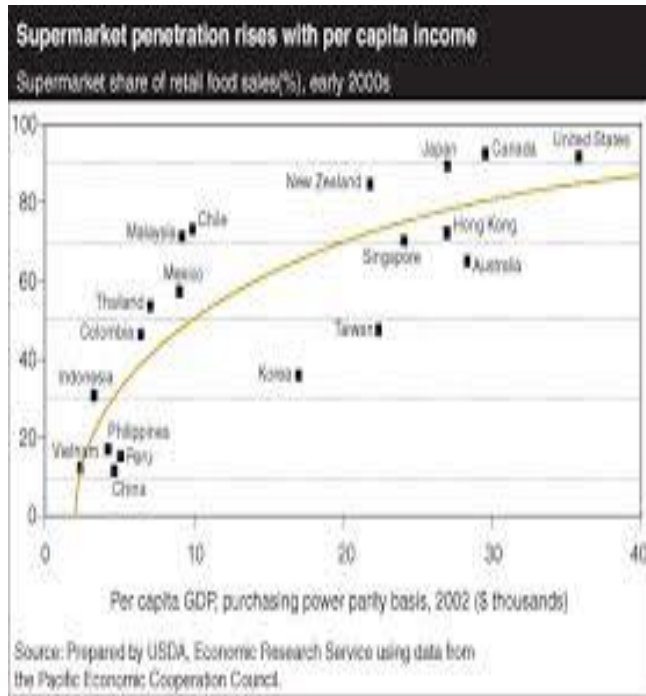
Source: Gira, GMC and IMF data

Rising Income Changes Consumption Pattern



Source: Rabobank, 2013

Growth in the Supermarket Fridges



Sunny Days for Indonesian Processed Poultry Sector

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Processed Poultry Demand in Indonesia to Rise 25%

Poultry consumption among Indonesians is expected to reach 2.5 million tonnes by 2018.

Posted on 06 August 2014 by Stephen Las Marias

Rabobank expects the demand for processed poultry in Indonesia to rise 20 to 25 percent annually, as poultry consumption among Indonesians is expected to reach 2.5 million tonnes by 2018.

In the latest report, "Time to Hatch a Plan for Indonesia Poultry", Rabobank estimates the two-fold increase in poultry consumption among Indonesian consumers will transform the sector from a backyard farming industry into a professionally managed, integrated production.

Poultry remains the top choice of protein among Indonesians, accounting for 57 percent of total meat consumption. The rising population and

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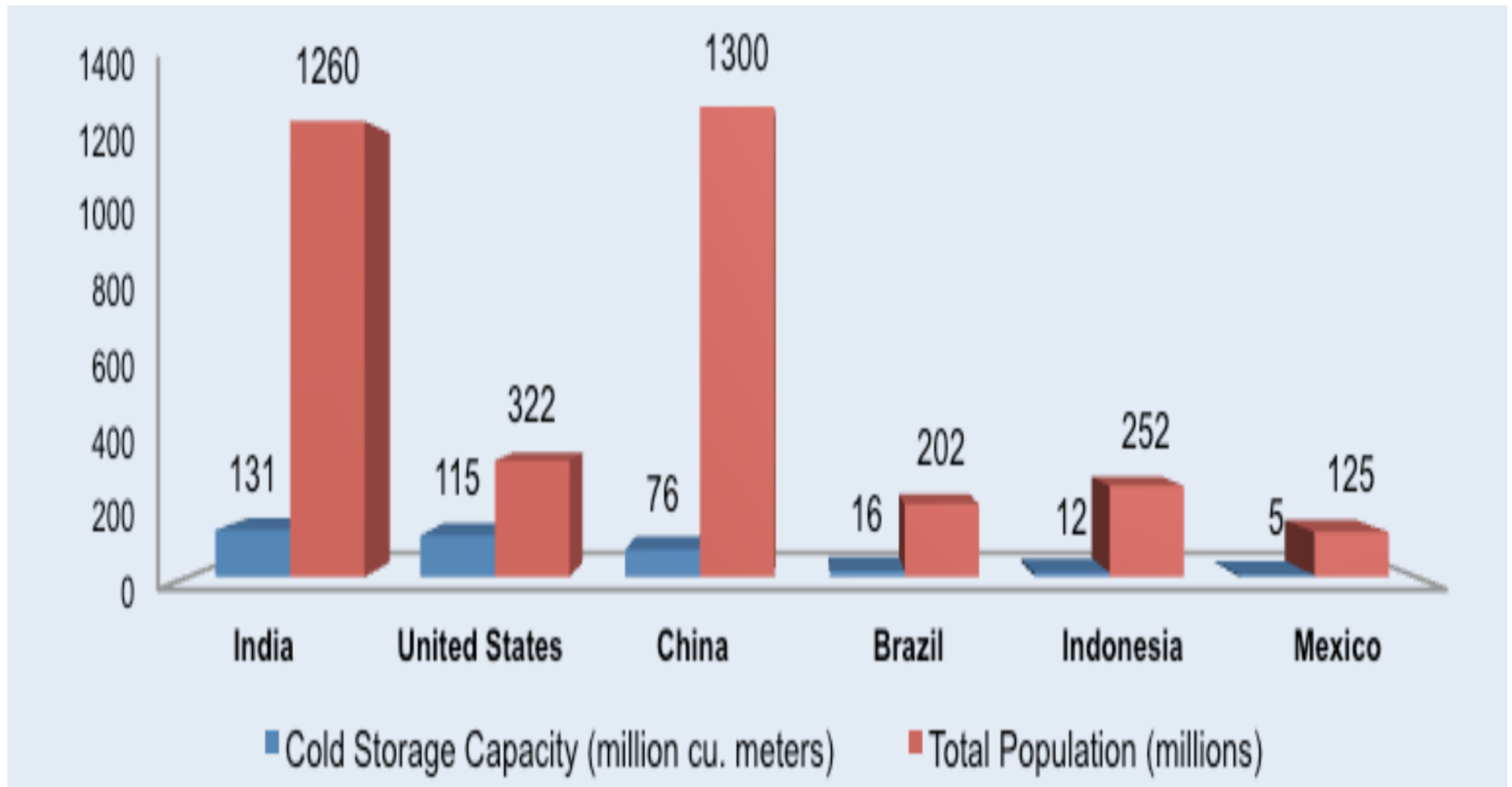
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Strategies for Improving the Cold Chain Logistics Infrastructure

Cold Storage Capacity vs Population



2016 ITA Cold Chain Top Markets Report

Cold Chain Competitiveness Scorecard: Lower Middle Income Economies



CRITERIA (1- 7 BEST)

GOVERNMENT/REGULATORY

	INDIA	INDONESIA	KENYA	VIETNAM
Ethics and corruption	4.1	4.0	3.7	3.8
Intellectual Property Protection	4.1	3.7	3.0	3.1
Legal framework - settling disputes	4.2	4.3	3.7	3.6
Legal framework - challenging regulations	4.2	3.9	4.0	3.7
Transparency of government policymaking	4.1	3.9	4.0	3.4
Foreign competition	4.2	4.1	4.2	3.8
Security	3.9	4.1	4.1	4.7
Burden of government regulation	3.9	4.1	3.1	4.5
	4.0	3.8	3.7	3.2



LABOR FORCE

	INDIA	INDONESIA	KENYA	VIETNAM
Flexibility	4.1	4.2	4.3	3.9
Flexibility of wage determination	4.5	3.6	4.8	4.4
Hiring and firing practices	4.0	4.3	5.2	5.0
Country capacity to attract talent	4.4	4.3	4.1	4.2
Country capacity to retain talent	3.8	4.1	3.7	3.3
Reliance on professional management	3.9	4.1	3.5	3.2
On-the-job training	3.9	4.7	4.4	3.6
	4.2	4.5	4.4	3.8



INFRASTRUCTURE

	INDIA	INDONESIA	KENYA	VIETNAM
Electricity and telephony infrastructure	3.8	4.4	3.7	3.9
Transport infrastructure	2.8	4.0	2.8	4.1
Technological adoption	4.6	4.4	3.6	3.6
	4.1	4.8	4.8	4.0



DEMAND / BUSINESS FACTORS

	INDIA	INDONESIA	KENYA	VIETNAM
Domestic market size	4.5	4.5	4.2	4.2
Domestic competition	6.4	5.7	3.7	4.5
Foreign competition	4.2	4.5	4.5	4.4
Control of international distribution	3.9	4.1	4.1	4.7
Local supplier quantity	4.0	4.2	3.8	3.7
Local supplier quality	4.6	4.7	5.1	4.5
State of cluster development	4.3	4.2	4.4	3.8
Quality of Demand Conditions	4.4	4.4	4.1	3.8
	4.1	4.4	3.9	3.8



INDUSTRY INTEREST

INDIA	INDONESIA	KENYA	VIETNAM
4.0	3.0	3.0	4.0

TOTAL SCORE

INDIA	INDONESIA	KENYA	VIETNAM
4.1	4.0	3.8	3.9

Lower - middle income economies are usually in the burgeoning stages of retail and cold chain development. These economies often need extensive investment for efficient systems. With less developed retail markets, it may be difficult for many cold chain service providers to find profit opportunities in the local market; therefore, exporting to other consumers markets usually offers the greatest opportunities. The growth of these markets will often hinge on the ease of doing business and trade; government policies and infrastructure development are often the largest impediments to business and to the growth of these economies.

Cold Chain Competitiveness Scorecard: Criteria



CRITERIA (1- 7 BEST)

GOVERNMENT/REGULATORY

- Ethics and corruption
- Intellectual Property Protection
- Legal framework - settling disputes
- Legal framework - challenging regulations
- Transparency of government policymaking
- Foreign competition
- Security

Burden of government regulation



LABOR FORCE

- Flexibility
- Flexibility of wage determination
- Hiring and firing practices
- Country capacity to attract talent
- Country capacity to retain talent
- Reliance on professional management
- On -the-job training



INFRASTRUCTURE

- Electricity and telephony infrastructure
- Transport infrastructure
- Technological adoption



DEMAND / BUSINESS FACTORS

- Domestic market size
- Domestic competition
- Foreign competition
- Control of international distribution
- Local supplier quantity
- Local supplier quality
- State of cluster development
- Quality of Demand Conditions

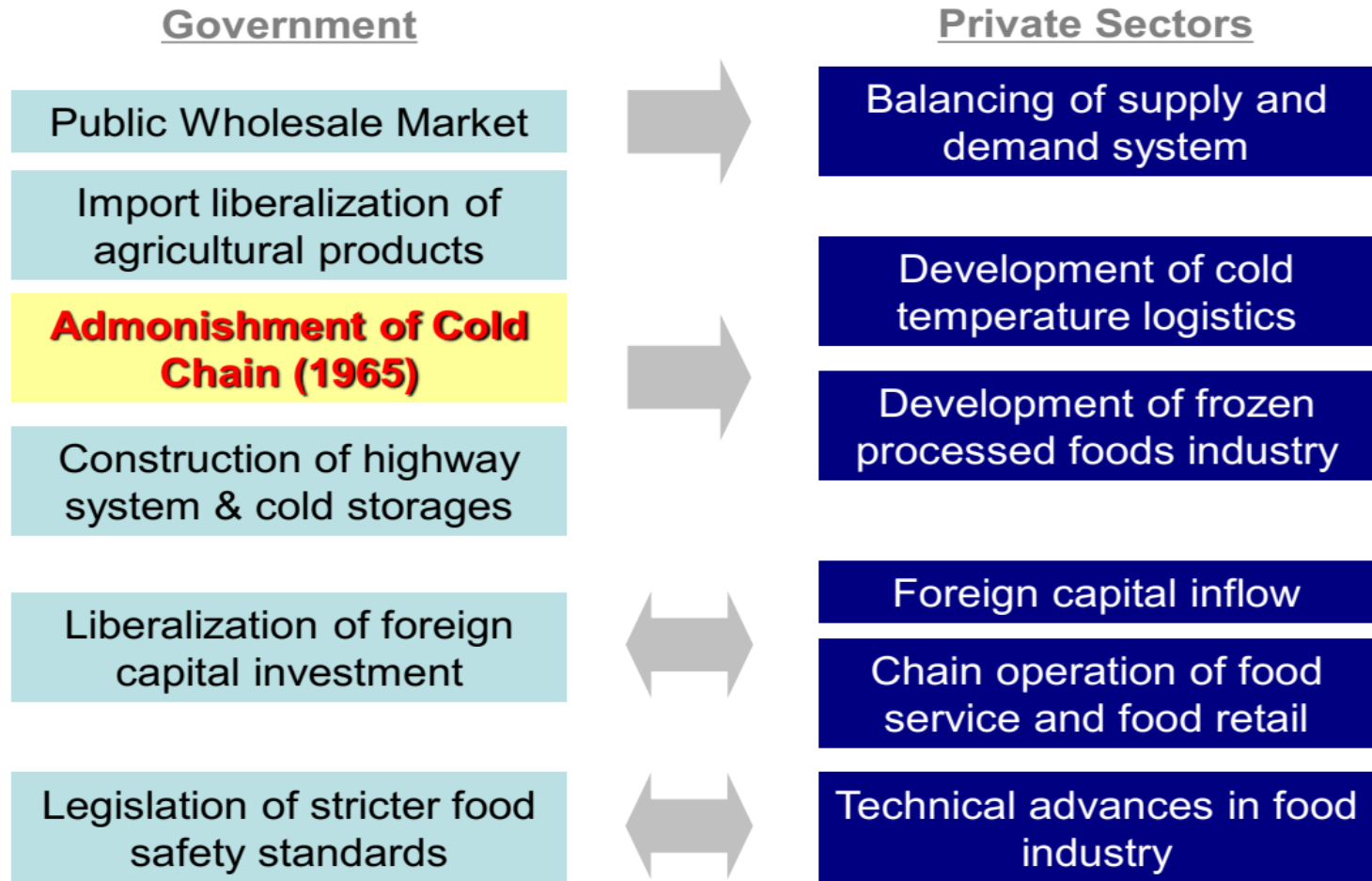


INDUSTRY INTEREST

TOTAL SCORE

Source: SC&L Review, 2017

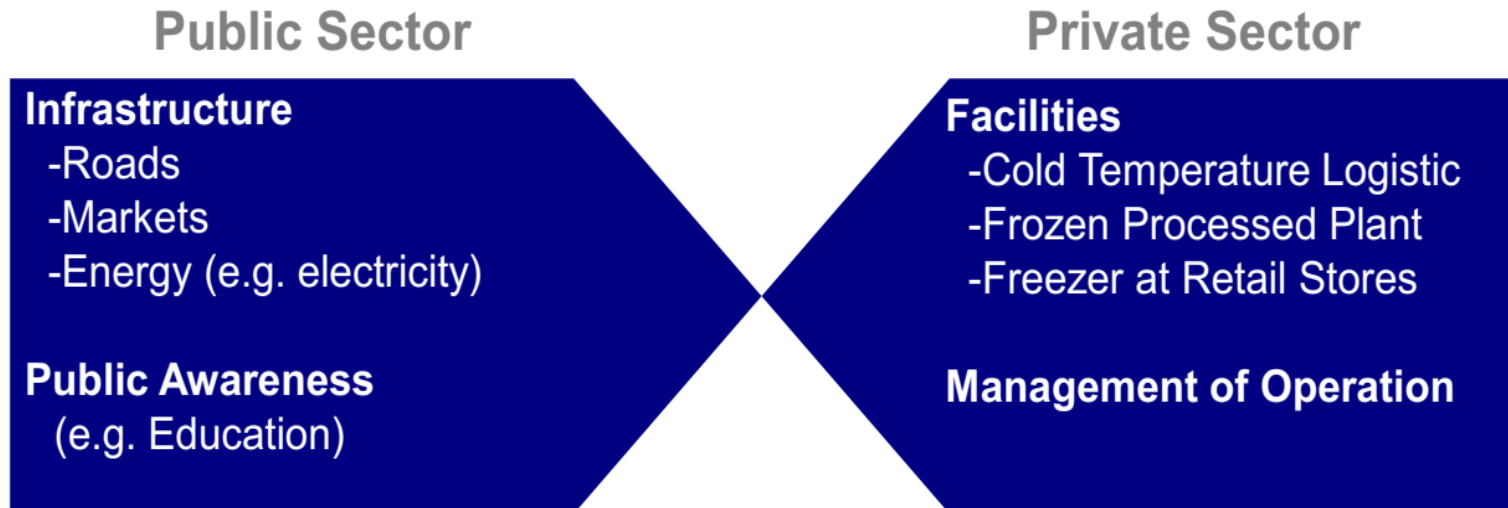
Lessons Learnt From Japan: PPP Scheme in Building Cold Chain Infrastructure in Japan



Source: Nichirei Corporation, 2013

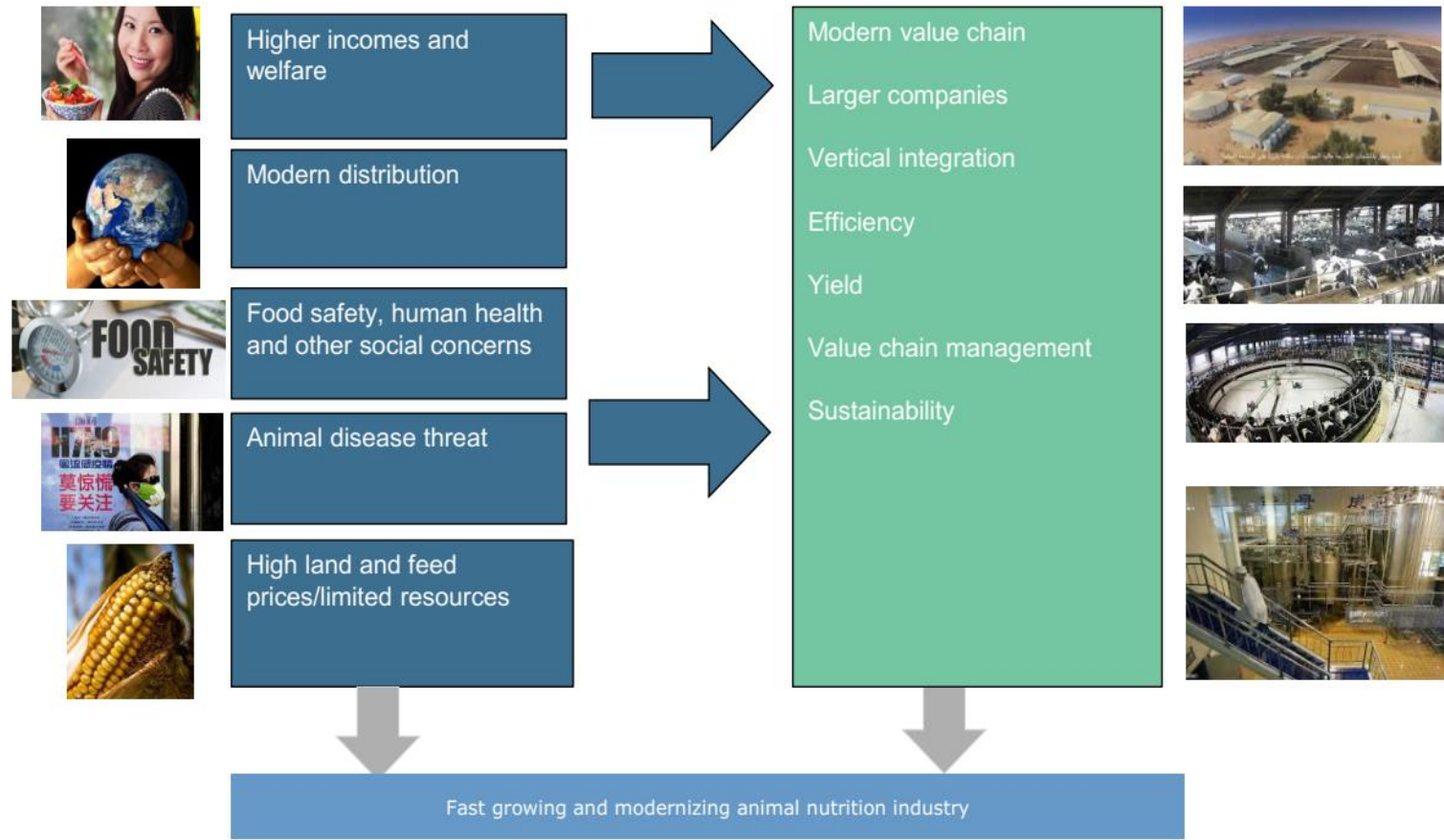
Principle in Building Cold Chain Infrastructure in Japan

- 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

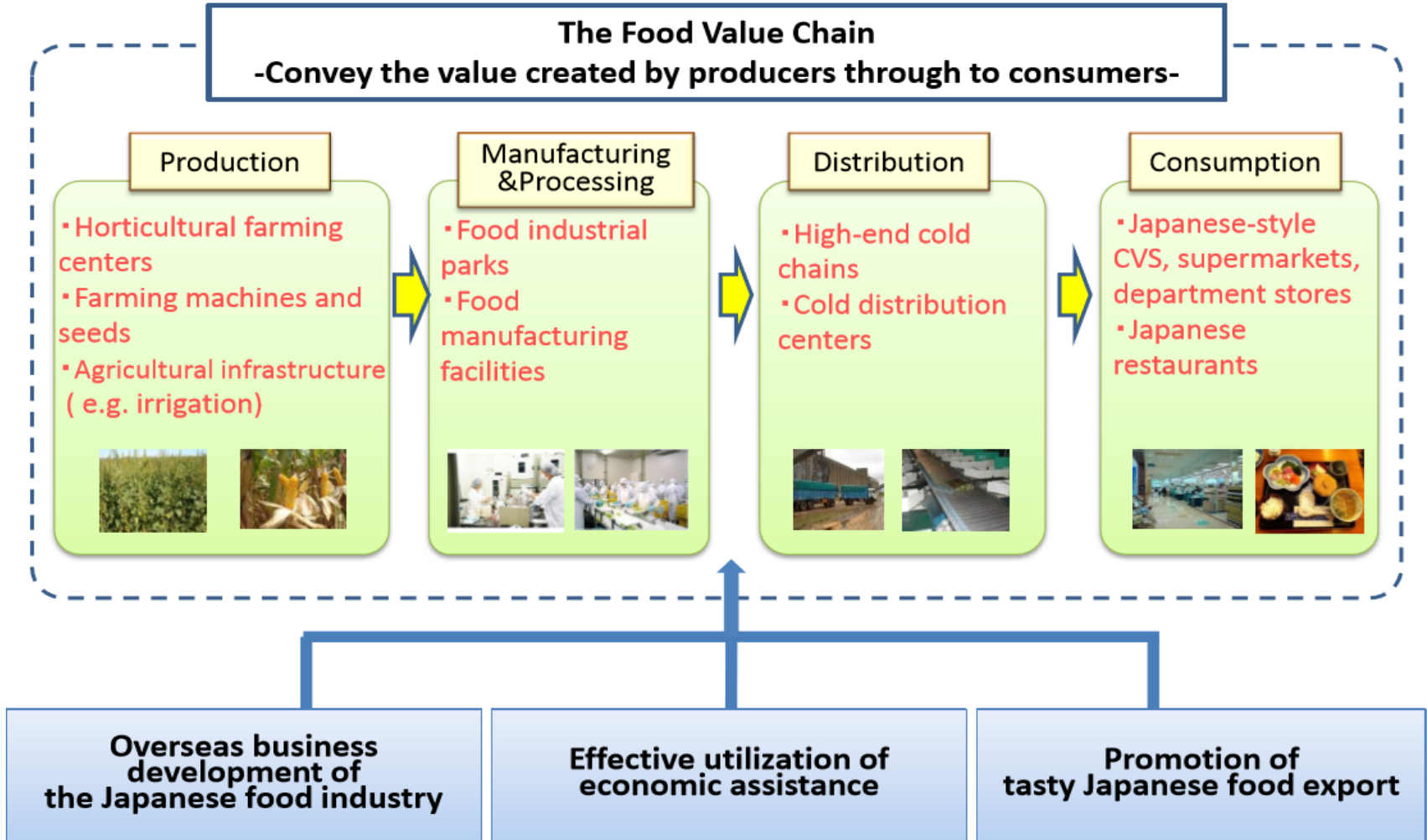


Source: Nichirei Corporation, 2013

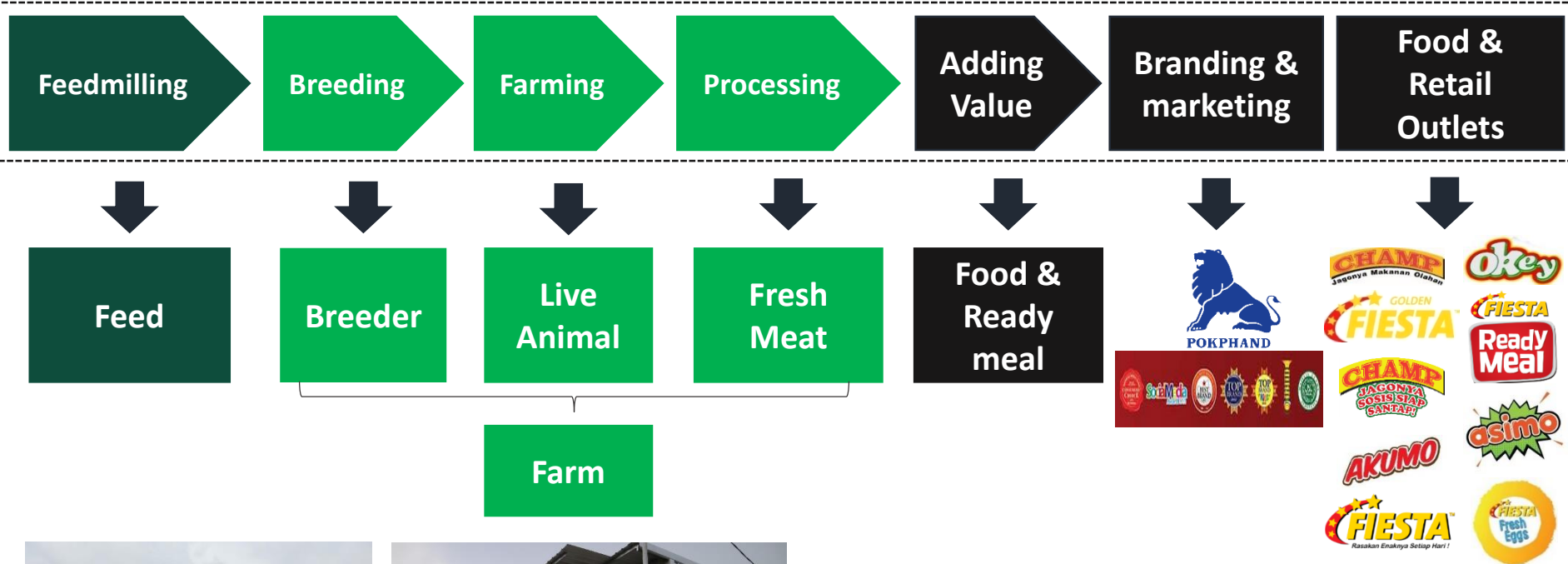
Need for a Fast Modernizing of Asian Animal Protein Industry



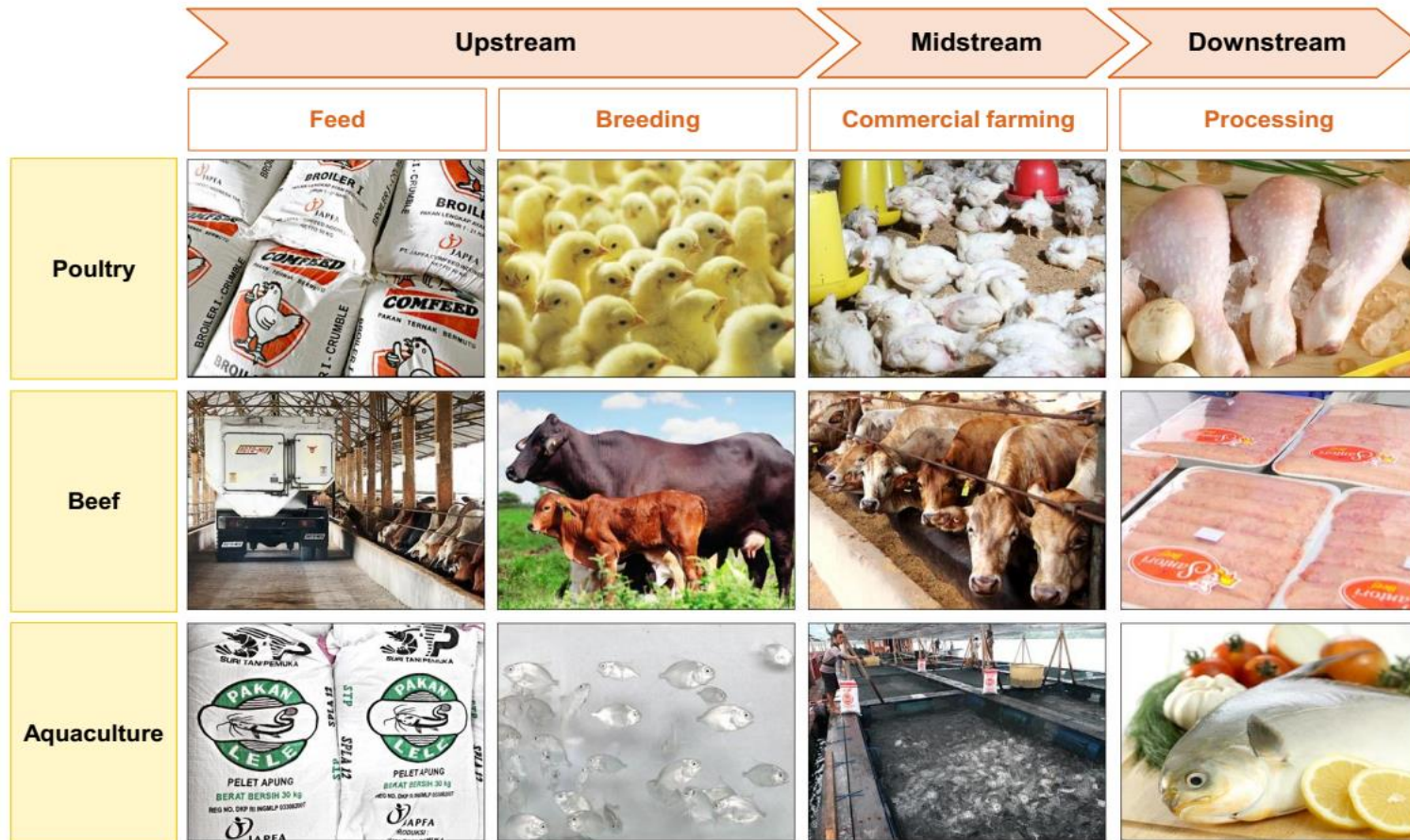
The Food Value Chain in Japan



Vertically Integrated Business Model in Indonesia: Charoen Pokphand



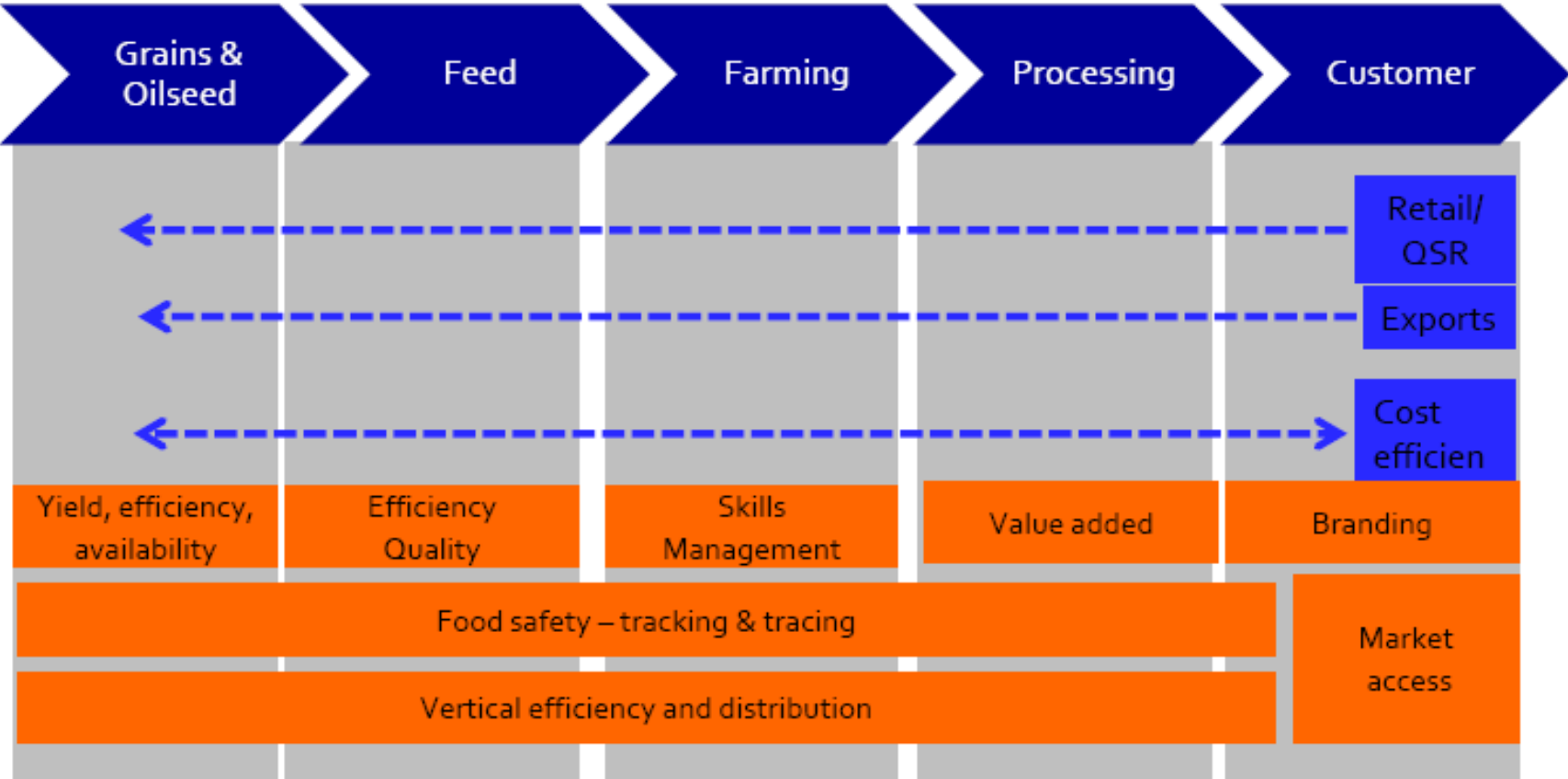
Integrated Business Model in Indonesia: Japfa



Integrated Business Model in Indonesia: Malindo



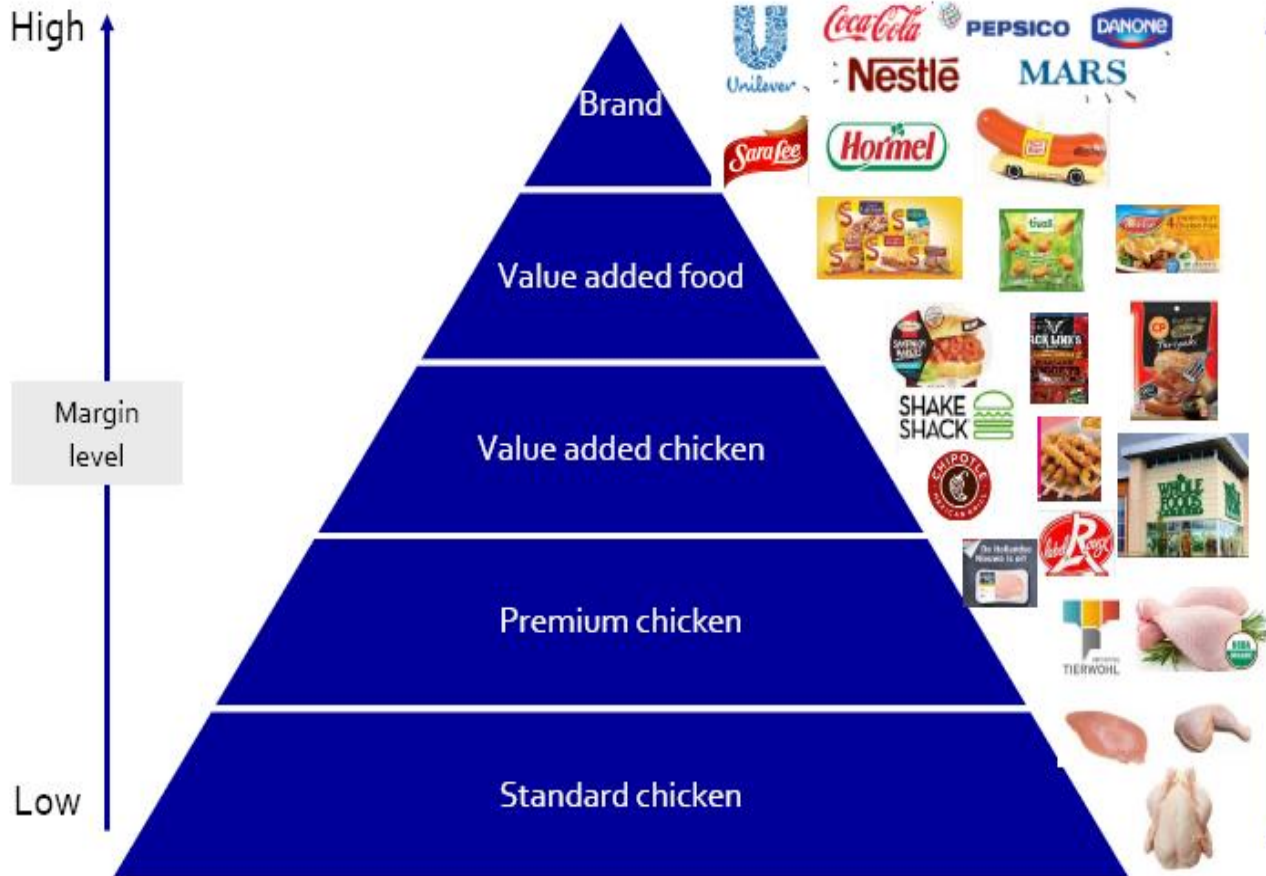
Improve Value Chain to Achieve Better Performance with Lower Costs



Source: Rabobank, 2015

From Volume to Value: The Journey to Higher Margins

The poultry value added pyramid



Investors who follow this strategy






Same Sort of Movement in US Poultry Market



• Source: Company Announcements, Rabobank Estimates, 2016

Source: Nan-Dirk Mulder, 2016

Evolution of Wet Markets in International Markets and Role Governments Can Play

	The traditional wet markets	Meat supply with limited cooling	Meat supply with powered cooling
Government role	<p>Description</p> <ul style="list-style-type: none"> - Many small traders - Bird trade everywhere - High employment 	<ul style="list-style-type: none"> - Many small traders - Sale of meat cut without cooling - Slaughter points 	<ul style="list-style-type: none"> - Small and mid-sized trader - Small processing plants + bird collection - Simple cooling
	<ul style="list-style-type: none"> - Health monitoring - Disease monitoring - Tax payments - Infrastructure 	<ul style="list-style-type: none"> - Health monitoring - Disease monitoring - At home slaughtering - Tax and infrastructure 	<ul style="list-style-type: none"> - Infrastructure - Power facilities - Bird collection and slaughtering places - Health and disease management
			

Evolution of Wet Markets in International Markets and Role of Governments Can Play

Butcher shops at wet markets

- Butcher shops enter market
- Share live birds declining, more meat cuts
- Municipal power facilities

- Infrastructure
- Power facilities
- Retail shop permissions
- Health and disease management



Convenience stores

- Middle income groups are looking for alternatives and buy more expensive products

- Infrastructure
- Retail permissions
- Health and disease management



Supermarkets and hyper markets

- Middle and higher income groups lower consumption at wet markets and by more at modern retail

- Infrastructure
- Retail permissions
- Health and disease management





time for change

Terimakasih atas perhatiannya