

BRUNEI DARUSSALAM CONFERENCE ON AGRICULTURE
“AGRICULTURAL SECTOR : CHALLENGES & WAY FORWARD”

Cold Chain Development in ASEAN and Application of Digital Technologies to ASEAN Food and Agriculture Sector

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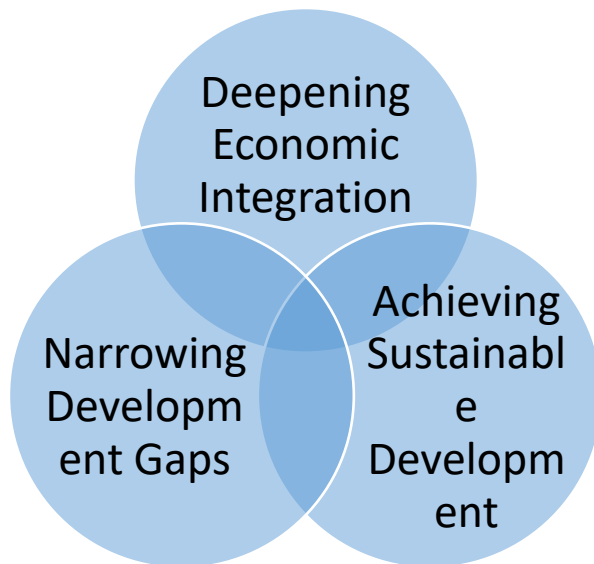
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Economic Research Institute for ASEAN and East Asia



- ERIA was established by a formal agreement of the 3rd East Asia Summit in 2007.
- Based on requests from the ASEAN and East Asia Summit, **ERIA conducts research and provides policy analysis.**
- To cooperate with the chair of ASEAN Summit, **ERIA develops the deliverables of the Summit.**
- **ERIA is encouraged to continue providing support to the chair of the ASEAN Summit and the East Asia Summit.**

ERIA's Research Fields



ASEAN and East Asia Economic Integration

Trade and Investment

Regulatory Management System

Infrastructure Development

Innovation and Industrial Policy

Energy Related Research

Environment (Circular Economy)

Disaster Management

Healthcare and Long Term Care Policy

Agriculture (ASEAN Food Value Chain)

Realisation of higher value added of agricultural products in ASEAN countries through development of effective cold chains

<Study period: May 2020 – Aug. 2021>

Objectives

1. Assess the current status of cold chains
 - condition of hard assets and soft assets,
 - related policy,
 - engagement of smallholders such as farmers and cooperatives
2. Identify obstacles and opportunities for development of cold chains and engagement of smallholders, and the required action to be taken by government and stakeholders
3. Identify successful cases of smallholders engaging in cold chains, analyse the benefits of their engagement with cold chains

✂ Country case studies are conducted in six countries – Cambodia, Indonesia, Lao PDR, Myanmar, Thailand, and Viet Nam.

Key finding

- Demand for cold chains in ASEAN is steadily increasing, especially in CLMV countries where it is rapidly increasing

Item		Demand for cold chain		Annual growth rate	
		Year	Value	Year	%
Thailand					
Food products by temperature control	Import	2020	THB 128.9 billion	2016-2020	1.5
	Export	2020	THB 116.4 billion	2016-2020	2
	Total	2020	THB 245.3 billion	2016-2020	1.8
Indonesia					
Frozen food production, trade, consumption	Production	2018	6.79 million tons	2014-2018	4.8
	Import	2018	0.41 million tons	2014-2018	9.7
	Export	2018	0.57 million tons	2014-2018	-9
	Consumption	2018	6.63 million tons	2014-2018	6.9
Lao PDR					
Frozen/Chilled/Fresh products	Import	2019	USD 101 million	2016-2019	38.5
Viet Nam					
Meat	Import	2019	USD 0.8 billion	2015-2019	27.2
Aquaculture	Export	2019	USD 8.6 billion	2015-2019	6.4
Vegetable and Fruits	Import	2019	USD 3.6 billion	2015-2019	17.3
	Export	2019	USD 3.7 billion	2015-2019	19.7
Capacity of commercial cold storage		2019	600,000 pallets	2016-2019	19.8

Key finding

- key players in the modern cold chain business in ASEAN tend to be joint ventures with foreign investments

Thailand			
Cold storage company (top3 in revenue)	Intersia Co., Ltd.	Bangkok Seafood Co., Ltd.	Thai Yokorei Co., Ltd.
Temperature-controlled transportation company (top3 in revenue)	M.S.T. Logistics Co., Ltd.	SCG Nichirei Logistics Co., Ltd.	MST Services Co., Ltd.
Indonesia			
Cold storage company (top 3 in capacity)	Enseval Putra Megatrading Tbk, PT	Unilever Indonesia, PT	Sukanda Djaya, PT
Cambodia			
Cold storage company (example of foreign company)	Full Well and Nisshin Logistics Co., Ltd	Nippon Express (Cambodia) Co., Ltd.	Yusen Logistics (Cambodia) Co., Ltd.
Lao PDR			
Cold storage company in Vientiane (top 3 in capacity)	Vientiane Cold storage	Lao-Haryoun Cold storage	Somphou Cold storage
Myanmar			
Cold storage company in Yangon (example of foreign company)	Ryobi Myanmar Distribution Service Co., Ltd	KOSPA Limited	Premium Sojitz Logistics
Viet Nam			
Cold storage company (example of foreign company)	Konoike Vina	Meito Vietnam	Panasato

Key finding

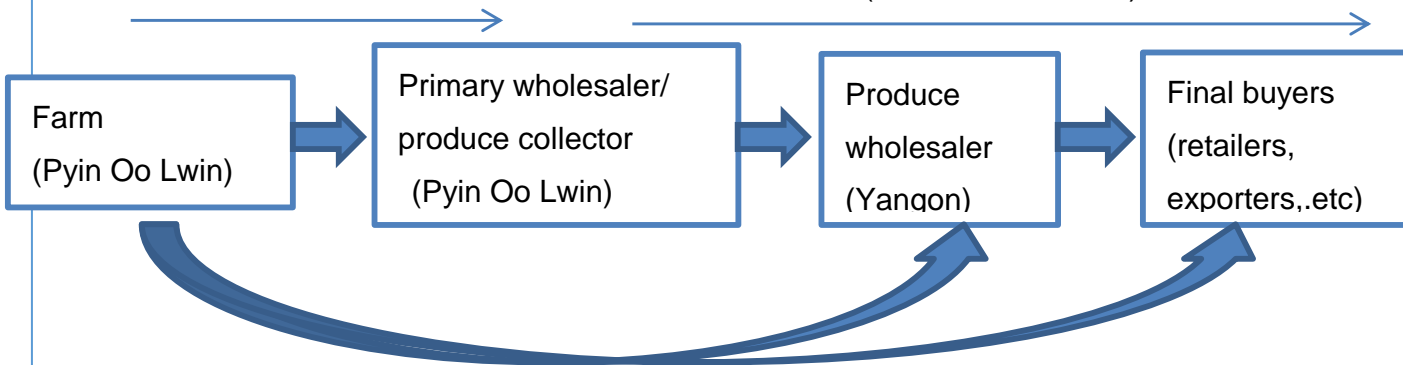
- Cold Chain could bring benefits to farmers such as higher income, but there are several challenges to develop cold chains.

<Myanmar>

- Strawberry farmers in the Mandalay region were connected with market in Yangon by Japanese refrigerated transport technology. Using refrigerated trucks reduced post-harvest losses and has lifted incomes of strawberry farmers in the region since 2017.

3 ton reefer box trucks

8 ton reefer box trucks/
General trucks (10 or 12 wheelers)



Cold chain supplier network (Myanmar)

<Viet Nam>

- Vegetable farmers participating in cold chain in Lam Dong Province experienced 10–15% higher income than those who did not participate in cold chain.
- The destination of products are supermarkets and export, and farmers need to meet strict technical standard such as GAP.



Vegetable Greenhouse (Viet Nam)

<Lao PDR>

- Local farmers in Oudomxay province are engaged in cold chain by contract farming with Chinese company during the dry season. The company introduced Chinese green beans and leaf vegetables that are new products with higher value. The harvested vegetables are collected and kept in cold storage for pre-cooling in the province and transported to China by the company's refrigerated truck. Engagement with the cold chain system in this way doubled the income of local farmers.



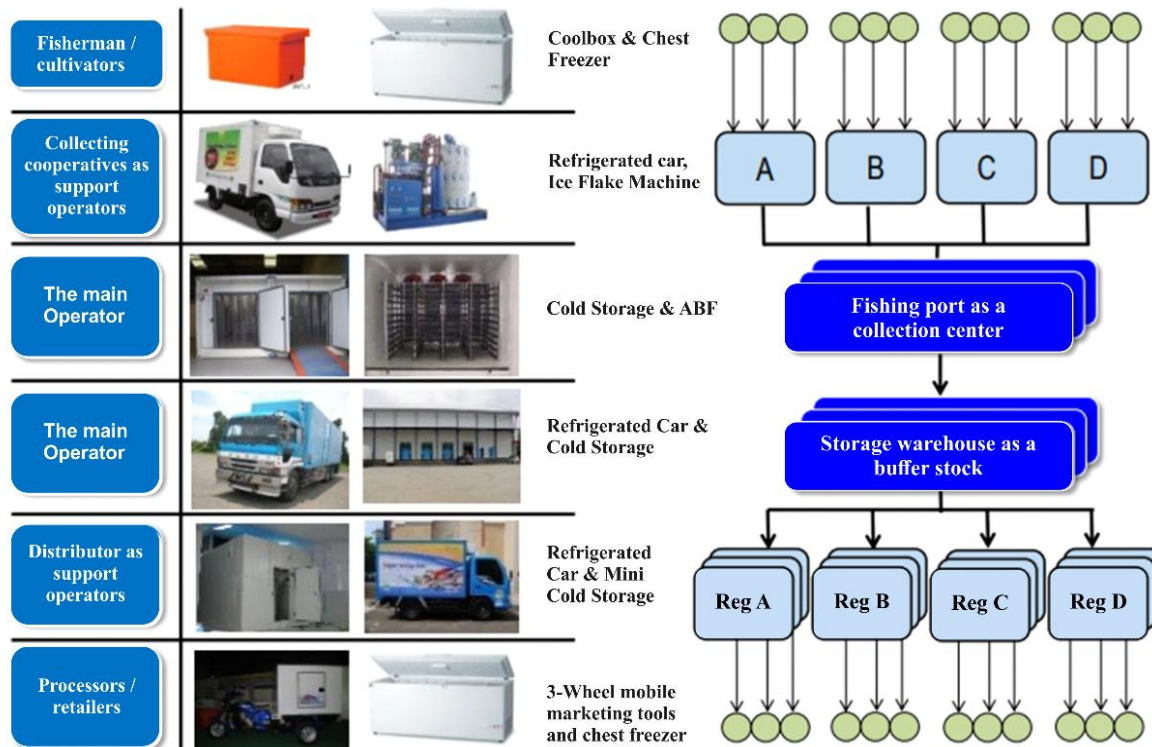
Green beans for China (Lao PDR)

Key finding

- Government initiatives to enhance cold chain development are highly expected.

<Indonesia>

- The government developed the National Fish Logistic System that regulates handling of frozen fish products
- The government developed guidance for facilities and infrastructure in cold chain system at each fish logistics corridor



Facilities and Infrastructure for Cold Chain System in Fish Logistics Corridor
Source: KKP (2020)

<Thailand>

- Q cold chain program implemented by Ministry of Transport as a voluntary standard enhances the quality of transportation of food and agriculture products. The Q Cold Chain sets the quality standard of temperature controlled transport.
- The Q Cold Chain specifies 10 requirements under 4 categories.



Q Cold Chain Logo

1) Transport operation	2) Sanitation
<p>1.1) Transport operators have the process to evaluate the company readiness and capacity prior to propose the temperature-controlled transportation contract to customer.</p> <p>1.2) Transport operators have cold chain operational handbook covering working processes from receiving orders to delivering products.</p> <p>1.3) Transport operators have an emergency response plan for handling cases relating to refrigerators 'breakdown during transport to avoid broken cold chain.</p>	<p>2.1) Transport operators have a proper method for cleaning refrigerated chambers at appropriate intervals.</p> <p>2.2) The chemical substances used for cleaning refrigerated chambers should be hygienic and safe for products and consumers.</p>
3) Refrigerated truck standard and maintenance	4) Human Resource Development
<p>3.1) The operator should install devices for measuring and recording temperature in the refrigerated chamber .These should be always in proper condition during transportation.</p> <p>3.2) Transport operators have the preventive maintenance plan of refrigerators and temperature monitoring devices .The result of examination and maintenance activity should be recorded.</p>	<p>4.1) Transport operators must provide a training program on topics related to temperature-controlled transportation.</p> <p>4.2) The operator should provide annual medical health check-up for drivers and related operational staff focusing on serious contagious diseases or any disease carrier according to the Notification of Ministry of Public Health, Thailand.</p> <p>4.3) Drivers and related operational staff who have symptoms of serious disease as mentioned in 4.2), gastrointestinal illness or respiratory-related diseases are not allowed to operate transportation.</p>

○ Common constraints and bottlenecks for development of cold chain

<Infrastructure>

- High investment cost to enter into cold chain business.
- Inadequate infrastructure and tools to meet demand.
- Lack of stable power supply and high price of electricity usage.

<Institution, strategy, standards, and regulation>

- Lack of specific institution, organisation in the government focusing on development of cold chain system.
- Lack of clear strategies for cold chain development across the chain.
- Lack of standard and regulation by products.

<Human resource development>

- Lack of skilled personnel in cold chain operation.
- Lack of awareness and knowledge of cold chain's impact on the product's quality and value (farmers, small entrepreneurs, and consumers).

Recommended action

- Government initiatives and supports for i) Installation of essential facilities such as cold storage, refrigerated trucks and necessary equipment, especially for SMEs, ii) stable power supply with affordable price.
- Establishment of specific agency to support the cold chain.
- Creation of national strategies for development of cold chain covering all stakeholders along the chain.
- Provision of standardized training on knowledge and skill of cold chain management and operation for stakeholders along the chain.
- Development and dissemination of model cases of successful cold chain involving farmers and cooperatives with use of PPP scheme.
- Promotion of alliance with foreign companies with advanced technology and knowledge in cold chain operation.

Enhancing food supply chain resilience and food security in ASEAN with utilisation of digital technologies

<Project period: Nov.2020–Dec.2021>

Objectives

1. Estimate impact of Covid-19 on agricultural production and food value chain (FVC) resilience in ASEAN.
2. Analyse potential as well as best practices in application of digital technologies and related policies for increasing agricultural productivity and resilience of FVC in ASEAN.
3. Support for formulation of **“The ASEAN guidelines on Promoting the Utilization of Digital Technologies for ASEAN Food and Agricultural Sector”**.

Structure of Project managed by ERIA & ASEAN Secretariat

Component 1 :

Covid-19 Impact analysis on food security and food value chain (FVC) in ASEAN by Macro-data scenario analysis (including the case of digital technology applied)

Component 2-1:

Technical Assessment & best practice, Government Initiative, related policy and regulation in EU, US, and Japan, considering applicability to ASEAN.

Component 2-2:

Technical needs assessment & enabling policy environment in ASEAN

Inputs (Finding, Data, Info., etc.)

Component 3:

Formulation of draft **“The ASEAN guidelines on Promoting the Utilization of Digital Technologies for ASEAN food and Agriculture Sector”**

Knowledge Sharing Workshops
inviting AMS officials

Feedback
(comments)

The ASEAN guidelines on Promoting the Utilization of Digital Technologies for ASEAN food and Agriculture Sector

Elements to be considered

1. Improvement of the food and agriculture value chain (production, post production, market linkage, value addition, etc.) with digital technologies (DT).
2. Support equitable, sustainable, and inclusive economic development in food and agriculture sector (FAS) (digital banking, access to loans, microfinance, etc.)
3. Support generation and diffusion of appropriate digital innovations for sustainable FAS.
4. Foster capacity building, engagement, and empowerment especially for marginalised groups in terms of DT.
5. Improve FAS resiliency during disruptions caused by unprecedented events and shocks with appropriate use of DT.
6. Strengthen regional partnership for digital application in the FAS.

Implementation Projects in Brunei Darussalam

ERIA supports the following projects based on academic research and study:

1. Digital transformation high-tech and high efficiency Agriculture Model Project.
2. Temburong Strategic Economic Development Masterplan.
3. Technical assistance on National Renewable Energy, Energy Efficiency and Conservation and promote EV and H2 fuel car for future.

