



EIBN Sector Reports



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Methodology

This reports aims to highlight the cold storage sector in Indonesia; the potential as well as the existing challenges.

In the preparation of this report, EIBN drew on a variety of sources and methods that are briefly explained here. General information on the cold storage sector was retrieved from publicly available sources, including articles from local newspapers, online news portals, the official website of the Indonesian Statistics Center (BPS), as well as the Ministry of Trade and Industry and the Ministry of Marine Affairs and Fisheries of the Republic of Indonesia.

The primary source for this report was the shared data and output from interviews with related associations. Additional gaps in this information were filled using various methods. If, for any reason, the latest official data has not yet been made available to the public, the latest data on hand was used. This report has been developed using data available until April 2016 and any data included is specifically mentioned in the report.

Executive Summary

Indonesia needs a reliable and appropriate supply chain in order to ensure distribution of goods across the country, especially for products that need special attention. Controlled temperature logistics is useful not only for the transport of food and beverage products, but also medical products, as well as for export-import businesses.

Cold storage and cold chains have always been part of Indonesia's logistics and supply chain. The cold storage available in Indonesia can be divided into four categories; chilled rooms, freezer rooms, blast freezers, and blast chillers. Each of the storage options are designed with certain temperature settings depending on their purpose and cold storage facilities in Indonesia are of both commercial and industrial types. Indonesia has also applied integrated and non-integrated business models, depending on the company's business purpose and available investment.

The demand for cold storage and cold chains comes from many sectors, such as the food and beverage sector, pharmaceuticals and the retail sector. The food sector is always closely linked to cold storage and cold chains, in particular, the fisheries sector. Despite its growing production, there are not enough cold storage or cold chains available for fisheries, beef, and poultry distribution. The pharmaceuticals sector needs cold storage to distribute vaccines and other temperature sensitive materials across the country.

The Indonesian government has taken note of the situation and is gearing up to work on cold storage projects. The Logistics Agency is studying the possibility of building national cold storage services, while the Ministry of Marine Affairs and Fisheries is focusing on developing smaller sized storage and ice flake factories across the region. Moreover, the regulation related to cold storage investment is heading towards significant improvement, highlighted by the Government's decision to open the cold storage sector 100% to foreign investment.

Through this report, EIBN recommends European companies to work closely with their Indonesian counterparts, especially if the foreign company would like to join a government tender. Local partners will also be helpful in approaching potential customers and importing products to Indonesia.

I. Introduction

A growing number of businesses and retailers in big cities are demanding a system whereby the quality of their product is retained and delivered on time, whilst being transported across a large region. Businesses are also pushing more dynamic movement of products, involving exports and imports. From the customer side, people are becoming more interested in buying better, varied, high-quality products. From the producer's side, the urge to expand the business locally and internationally through export is getting stronger. However, the competition is tight and traditional farmers are not yet able to preserve and pack their products accordingly. With proper storing and quality checks, business owners could also prevent major spoilage and product scarcity.

As an archipelago, Indonesia needs reliable and appropriate supply chains to ensure distribution of goods across each part of the country. Slow infrastructure development hinders the swift distribution of goods, especially fresh products that need special attention. The distribution of goods in Indonesia is not balanced, with most of the available products concentrated mainly in Java, where more than 50% of the total Indonesian population lives. There have been difficulties in accessing and delivering fresh products across the islands. Consequently, the products sold outside Java are of limited availability and at higher prices.

Controlled temperature logistics will be useful, not only for the transport of food and beverage products such as fruits, meat and fishery products, but also medical products such as IV solutions, specialty chemicals and human organs that need to be stored in cold temperatures and be transported properly. Cold storage and cold chains will also be beneficial for the development of export-import businesses.

There are several factors that hamper the development of this business sector though, such as the large amount of investment needed, lack of power supply, and insufficient supporting facilities. However, this business sector needs to grow in order to push the balance of development and growth in Indonesia.

II. Cold Storage Type, Business Model and Cold Chain

2.1. Types of Cold Storage

Just as there are many types of products that need cold storage, there are many types of cold storage, each with their special features and purpose. Based on the temperature range and purpose, the cold storage currently available in Indonesia can be divided into four categories: chilled rooms, freezer rooms, blast freezers, and blast chillers¹.

Chilled rooms are cold storage areas with a low temperature, set in between one and seven degrees Celsius. The purpose of this room is to store fresh agricultural products such as vegetables, fruits, as well as other products with a shelf life of up to two months. The other advantage of chilled rooms is that they can function as a thawing room, which is set between 7 – 10 degree Celsius. Chilled rooms used as thawing rooms can be found in the food processing industry. Thawing rooms are used to increase the temperature of beef, poultry, and fish after being frozen, before the cooking process.

The second is freezer room storage with temperatures of -15 to -20 degree Celsius, which keep the products frozen for certain period of time. The products kept in this type of warehouse are fish, sausages, milk, cheese, potatoes and other frozen ingredients.

Blast chillers are rooms operated for fast refrigeration after the cooking process at the production facilities. The final temperature of products stored in this room is in between one and four degrees Celsius. Meanwhile, blast freezers are used for fast freezing and are useful, not only for processed foods, but also for beef, fish and shrimps. The target temperature after the freezing process is up to -20 degree Celsius.

Blast chillers and blast freezers are important tools to prevent spoilage, as their purposes are to; prevent bacteria and other contamination, maintain the original taste of the products, prevent the reduction of water content, and maintain the nutritional quality.

Based on the capacity of the refrigeration machine, the cold storage facilities in Indonesia can be described as commercial or industrial types. Commercial cold storage is designed and built for rent, commonly operated as the main business activities of logistics and supply chain companies. The refrigeration machine design and configuration, including the storage racking system, is made flexible to suit the dynamic flow of goods. In commercial cold storage, the refrigeration machines are lower in capacity but larger in number, so that they can operate according to the client's needs. The capacity of this type is commonly below 500 tons. On the other hand, industrial cold storage facilities are built as part of a company's production facilities.

¹ Indonesian Commercial Newsletter (ICN), Cold Storage Industry in Jakarta and Surrounding Area, Jakarta, August 2011, available at : <http://www.datacon.co.id/ColdStorage-2011IndustryProfile.html>

The capacity of machines in these storage facilities is much bigger and the racking system is installed to store products. The capacity of this type of storage is generally bigger than 500 tons².

There are also several type of refrigerant used in Indonesia, the most common materials are; ammonia, Freon, CO₂, and hydrocarbon. Cold storages with large capacities generally use ammonia, while the small types use CO₂, as it is more cost efficient.

2.2. Business Model

Products are kept in reserve before being prepared, packaged, and delivered based on specific orders from the production facilities. As many companies have different types of products and business purposes, the business model commonly found in cold storage operations in Indonesia can be divided into integrated storage models and non-integrated models³.

In the integrated business model, cold storage facilities are established for the company's own purpose, acting as supporting facilities for the company's production. This model is mainly applied by the production company instead of logistics companies. The main function of the cold storage is to keep the supply of ingredients or final products. The ingredients will later be sent to factories while the final products will be distributed to retailers. PT Unilever Indonesia applies this business model mainly for their ice cream production and distribution.

In the non-integrated business model, a company builds and operates cold storage facilities and later allows clients to rent a certain length of space for their products. The availability of non-integrated cold storage is beneficial for smaller companies who need to store their products at cold temperatures, but don't have enough space and budget for facilities of their own. The client may either take care of the product distribution themselves, or ask the company to manage the whole cold chain. Cold storage rental businesses are usually operated by logistic companies as part of their business activities⁴.

2.3. Cold Chain

A cold chain can be described as the transportation of temperature sensitive products along a supply chain, using thermal and refrigerated packing methods and logistical planning to protect the integrity of these shipments. There are several means in which cold chain products can be

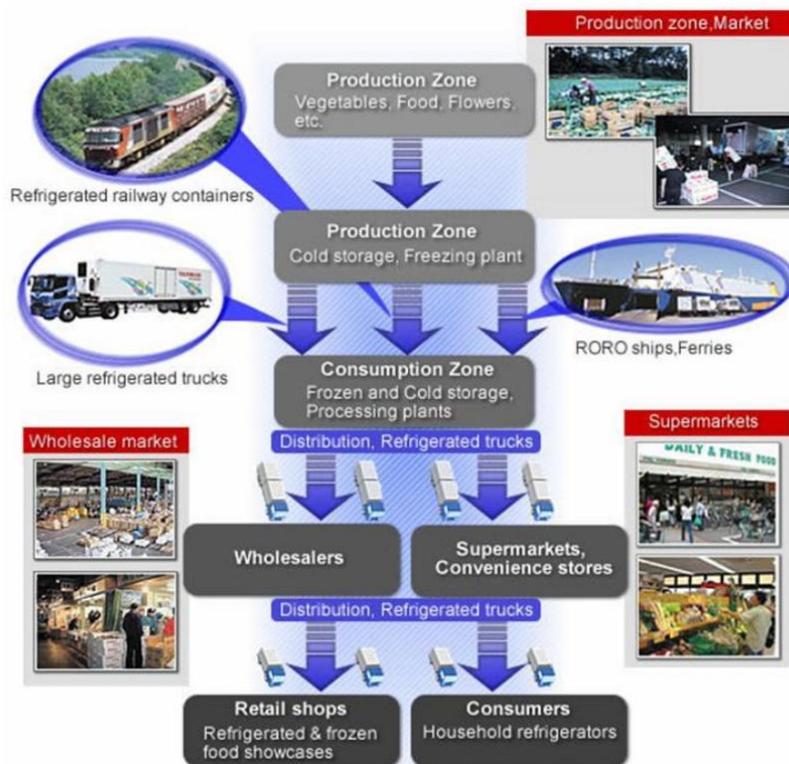
² Ibid p.1

³ Ibid p.1

⁴ Ibid p.1

transported, including refrigerated trucks and railcars, refrigerated cargo ships, as well as by air cargo⁵.

Figure 1 : Cold Chain Diagrams



Source : CFCFA Logistics Management Training : Cold Chain Logistics⁶

Modern consumers demand that products are delivered whilst maintaining their qualitative attributes, such as freshness, flavor, and nutritional quality, thus proper handling must be provided to insure that the product retains its value during transit. The proper handling process includes adequate and careful packaging, temperature control, and storage conditions. The temperature of the vehicle and storage must be kept constant throughout transit. The most common temperature settings are "banana" (13 °C), "chill" (2°C), "frozen" (-18°C) and "deep

⁵ Rodrigue, Dr. Jean-Paul and Dr. Theo Notteboom, The Cold Chain and its Logistics, The Geography of Transport Systems, Hofstra University, New York, 2016, available at : <https://people.hofstra.edu/geotrans/eng/ch5en/appl5en/ch5a5en.html>

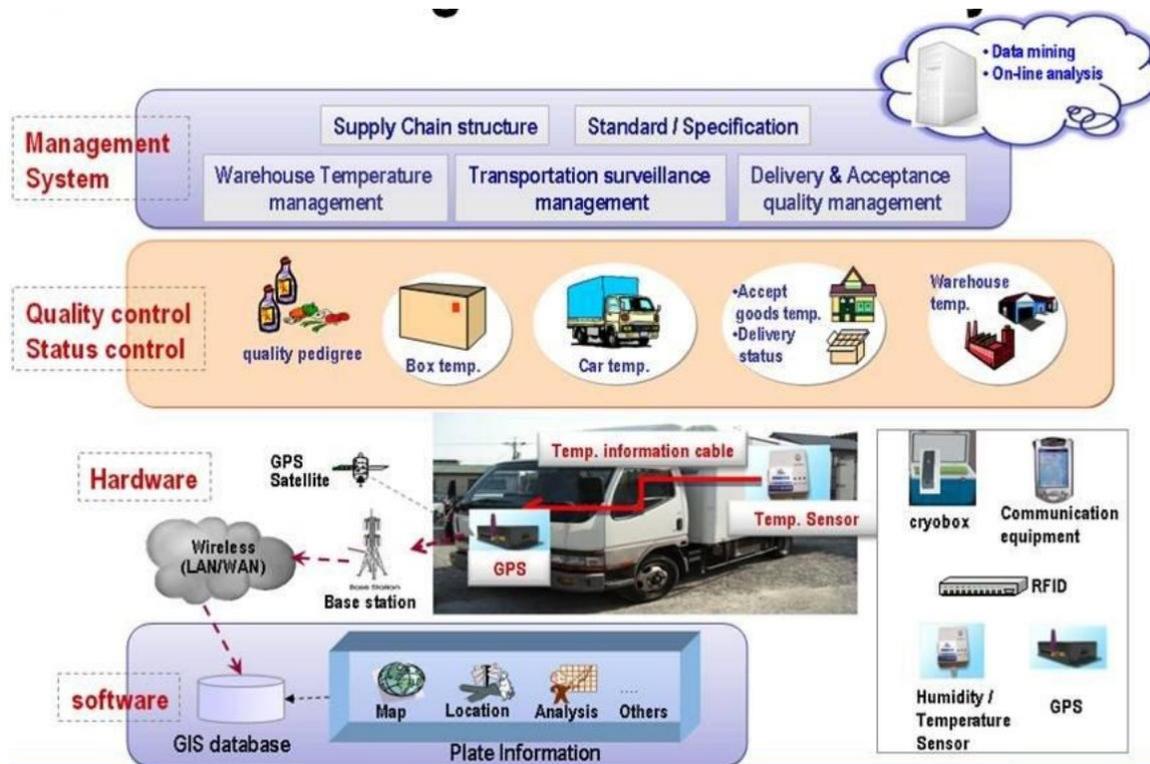
⁶ Sze, Andy, Cold Chain Logistics, CFCFA Logistics Management Training, Central Asia Regional Economic Cooperation, available at : http://www.carecprogram.org/uploads/events/2013/CFCFA-training-KGZ/009_103_209_cold-chain-logistics.pdf

frozen" (-29 °C)⁷. The main clients of these specific logistic chains are companies producing or importing/exporting food and pharmaceutical products.

Cold chains are becoming more important in the Indonesian transportation business, as Indonesian consumers are demanding better quality and are becoming more interested in buying imported products. The producer needs to ensure the product's freshness and quality until it reaches their customers. Cold chains play an important role by transporting the food safely, while preserving the texture, taste, and nutritional value of the food.

Modern cold chain carriers require well developed equipment and IT systems to support their operations, for example by installing a device to track, not only the location of the package, but also its temperature, and an accompanying IT system capable of analyzing the data.

Figure 2: Cold Chain Logistics Interactive System



Source: CFCFA Logistics Management Training : Cold Chain Logistics⁸

In Indonesia, logistic companies who professionally operate cold storage as part of their core business, also often provide cold chain transport services. The logistic company handles the transportation of the product from source to the storage facility, and sometimes even to the final

⁷ Ibid

⁸ Ibid p.9

retail destination. The company is also responsible for controlling and maintaining the product temperature during transport.

Fast food chains generally use the full cold chain services provided by specialised logistics companies. As the fast food chain in Indonesia applies a franchise system, so building and operating a cold storage facility is considered less beneficial for the company structure. Cold storage requires investment in capital-intensive equipment, with temperature controlled vehicles, and energy dependence. There would be a greater management burden if these companies were to manage their own cold storage and cold chain⁹.

II. Demand for Cold Storage

2.1. Food Consumption Trends

The country's food consumption increases with the growing population, which has now reached more than 250 million people. As lifestyles continuously evolve, an increasingly modern food retail sector is likely to develop the market for higher value foods and beverages, as well as food processing and logistics equipment. The increase in market demand will increase import activities, demand for improvements in logistics systems, and growth of modern food retailers.

Consistent with the increased share growth of prepared and miscellaneous categories in the food consumption data, retail sales of packaged food has grown rapidly. The increase in packaged food purchases likely corresponds in part to the urban consumers' need for timesaving convenience and desire for variety.¹⁰ Packaging acts as a partial guarantor of food safety and allows food to be stored for some time.

In the figure below, we can see the most popular packaged foods among Indonesian people. In the top three, we can find dried processed food, bakery products and dairy products.

Table 1: Packaged Food Sales in Indonesia; Indonesia's Packaged Food Retail Sales (2010-2013) in US\$ Millions

| Category | 2009 | 2010 | 2011 | 2012 | 2013 | CAGR % 2009-13 |
|----------------------------------|----------|----------|----------|----------|----------|----------------|
| Packaged Food (Total) | 15,627.4 | 17,650.7 | 20,082.9 | 22,861.9 | 25,990.6 | 13.6 |
| (Packaged Food) Baby Food | 1,596.9 | 1,836.8 | 2,090.7 | 2,371.6 | 2,682.6 | 13.8 |
| (Packaged Food) Bakery | 2,385.6 | 2,593.4 | 2,858.9 | 3,200.5 | 3,567.7 | 10.6 |
| (Packaged Food) | 268.5 | 319.1 | 379.9 | 453.0 | 536.4 | 18.9 |

⁹ Yasni, Hasanudin, Asosiasi Rantai Pendingin Indonesia, Interview, Jakarta 15 April 2016

¹⁰ Rada, Nicholas, and Anita Regmi, 2010, Trade and Food Security Implications from the Indonesian Agricultural Experience, WRS-10-01, Economic Research Service, U.S. Department of Agriculture, May, pp. 19.

| | | | | | | |
|---|---------|---------|---------|---------|---------|------|
| Canned/Preserved Food | | | | | | |
| (Packaged Food) Chilled Processed Food | 72.0 | 80.4 | 92.3 | 108.6 | 128.3 | 15.5 |
| (Packaged Food) Confectionery | 1,297.4 | 1,422.0 | 1,570.1 | 1,760.4 | 1,980.0 | 11.1 |
| (Packaged Food) Dairy | 1,709.5 | 1,900.8 | 2,134.6 | 2,416.5 | 2,715.3 | 12.3 |
| (Packaged Food) Dried Processed Food | 5,193.7 | 5,947.7 | 6,844.0 | 7,828.8 | 8,980.1 | 14.7 |
| (Packaged Food) Frozen Processed Food | 348.6 | 409.7 | 466.3 | 542.7 | 639.1 | 16.4 |
| (Packaged Food) Ice Cream | 204.6 | 221.9 | 255.8 | 299.4 | 356.1 | 14.9 |
| (Packaged Food) Meal Replacement | 16.9 | 31.9 | 53.4 | 90.6 | 139.1 | 69.3 |
| (Packaged Food) Noodles | 1,588.9 | 1,736.5 | 1,871.0 | 2,110.3 | 2,431.9 | 11.2 |
| (Packaged Food) Oils and Fats | 805.7 | 964.3 | 1,177.7 | 1,372.6 | 1,541.7 | 17.6 |
| (Packaged Food) Pasta | 14.0 | 16.0 | 18.5 | 20.8 | 23.7 | 14.1 |
| (Packaged Food) Ready Meals | 4.4 | 4.7 | 5.0 | 5.5 | 6.0 | 8.2 |
| (Packaged Food) Sauces, Dressings and Condiments | 741.8 | 828.7 | 932.7 | 1,049.2 | 1,184.9 | 12.4 |
| (Packaged Food) Snack Bars | 2.7 | 3.9 | 6.3 | 10.0 | 12.6 | 47.1 |
| (Packaged Food) Soup | 3.2 | 3.7 | 4.3 | 4.8 | 5.5 | 14.9 |
| (Packaged Food) Spreads | 70.7 | 76.5 | 83.7 | 92.6 | 103.0 | 9.9 |
| (Packaged Food) Sweet and Savoury Snacks | 889.6 | 988.3 | 1,108.8 | 1,234.9 | 1,389.6 | 11.8 |

Source: Euromonitor, March 2014. Via Market Overview - Indonesia ¹¹

The reason for this growing interest in packaged and processed food is mainly urbanisation, which has led to more consumer demand for timesaving, safe food¹². Packaged foods can be conveniently found in modern retail establishments, in which food safety is more likely guaranteed. In the modern retail scene, food standards are better recognised and the establishments are better equipped with temperature control devices such as refrigerators.

In recent years, it seems that a more educated class has emerged in the Indonesian population, with a clear increase in health-conscious individuals and consumers who tend to make “better” food choices. In this sense, it can be said that there is a growing awareness of healthy lifestyles, leading to a growing consumption of healthy food and drinks¹³.

¹¹ Market Overview Indonesia, Agriculture and Agri-Food Canada, Canada, 2014, available at : <http://www.agr.gc.ca/eng/industry-markets-and-trade/statistics-and-market-information/by-region/southeast-asia/market-overview-indonesia/?id=1418411687589>

¹² Rada, op. Cit p. 11

¹³ « Health and Wellness in Indonesia », Euromonitor, October 2013.

This new consumption pattern is mainly due to the rise of the middle class and new lifestyles, which result in an increasing interest in organic products and diet foods. Many marketing campaigns use healthy lifestyle concepts to motivate and attract consumers, for example by suggesting sugar free or gluten free products to prevent chronic disease.

2.2. Food Production and Demand of Cold Storage

Cold storage and cold chains in Indonesia will always be linked to the country's fishery production and export business. The Ministry of Marine Affairs and Fisheries took drastic measures in 2014 to ban illegal fishing, even going as far as closing the fisheries sector to foreign players. The ministry reports that their recent regulation has helped the fishery sector's GDP growth rise to 8,9% by the end of 2015¹⁴. Aquaculture production has also increased from 20.40 million tons to 23.99 million tons¹⁵.

With more than 800 fishing ports scattered along Indonesia's coastline, this positive trend is expected to continue in the following years, mainly to meet the demand of local markets and also to reduce import burdens.

Table 2: Fishing Ports in Indonesia (2014)

| Type | Number of ports |
|--|-----------------|
| Pelabuhan Perikanan Samudera (PPS) - Oceanic Fishing | 6 |
| Pelabuhan Perikanan Nusantara (PPN) – Archipelagic | 15 |
| Pelabuhan Perikanan Pantai (PPP) - Coastal Fishing | 47 |
| Pangkalan Pendaratan Ikan (PPI) - Fish Landing depot | 748 |
| Private fish port | 2 |
| Total | 818 |

Source : Ministry of Fisheries Statistics and Data Information System¹⁶

In 2015, fish catches reached 6,52 million tons whilst aquaculture production reached 17,47 million tons. With national consumption of fish up to 50kg per capita, local fisheries and aquaculture production has to increase in order to meet local demand.

Table 3: Fisheries Production (2015)

| Year | Capture Fish (in million tons) | Aquaculture (in million tons) |
|------|--------------------------------|-------------------------------|
| 2014 | 6.04 | 14.36 |
| 2015 | 6.52 | 14.47 |

Source : Ministry of Fisheries Statistics and Data Information System¹⁷

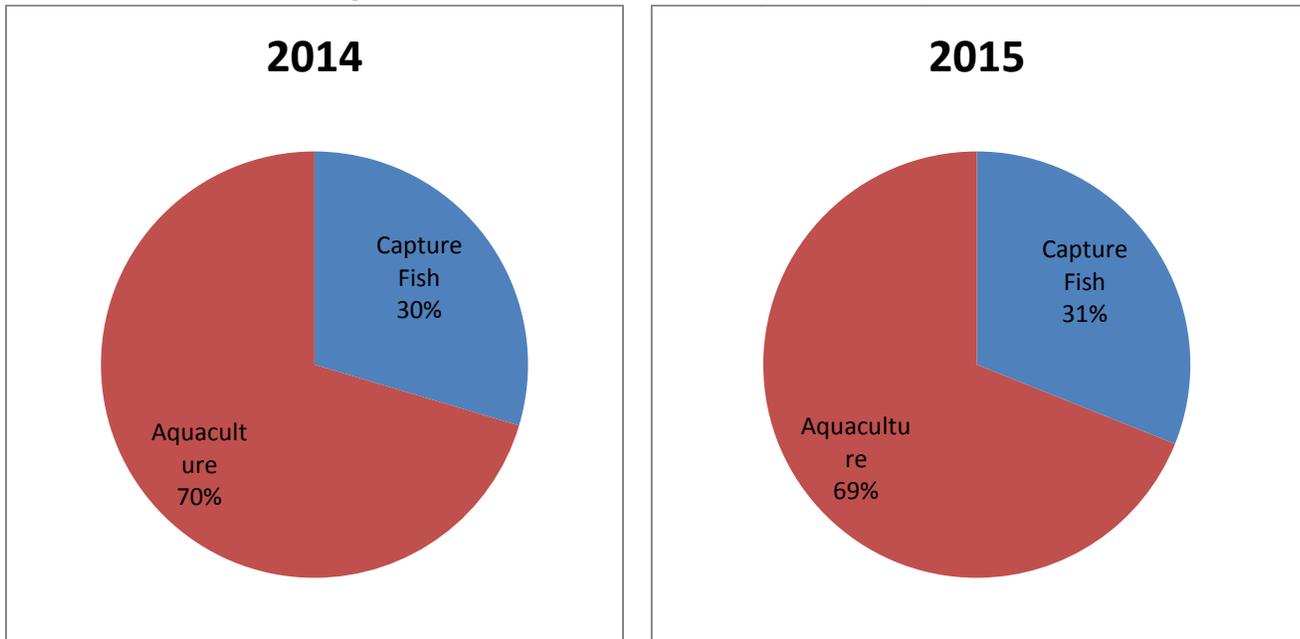
¹⁴ Ningsih, Damiana and Tri Listyarini, Investor Daily, Menteri Susi: Sektor Perikanan Makin Baik, 4 April 2016, available at : <http://www.beritasatu.com/ekonomi/358151-menteri-susi-sektor-perikanan-makin-baik.html>

¹⁵ Ibid

¹⁶ Ministry of Fisheries Statistics and Data Information System, 2016, available at : <http://statistik.kkp.go.id/>

¹⁷ Ibid

Figure 3 : Fisheries Production (2014 - 2015)



Source : Ministry of Fisheries Statistics and Data Information system¹⁸

To strengthen fisheries production, the Ministry of Marine Affairs and Fisheries will provide 5000 ships for free. With a budget of up to IDR 4,7 trillion, the ministry has assigned PT PAL to build the ships with capacities ranging from 5 – 30 tons. The procurement process should be finished by early 2016 and the ships are expected begin operation in the first quarter of 2016¹⁹.

Not only focusing on production, the Indonesian government is pushing for better fish exports. The Indonesian Central Bureau of Statistics noted a surplus in the fisheries trade, in which fish exports increased significantly compared to fisheries imports. Among many commodities being exported, from the total export in Q1 of 2015, shrimp has the bigger portion and value compared to others.

Table 4 : Fisheries Export 2013 - 2015

| Year | Value (in USD) |
|-----------|----------------|
| 2013 | 2,860,000,000 |
| 2014 | 3,100,000,000 |
| 2015 (Q1) | 906,770,000 |

Source : Ministry of Marine Affairs and Fisheries²⁰

¹⁸ Ningsih, op. Cit p. 13

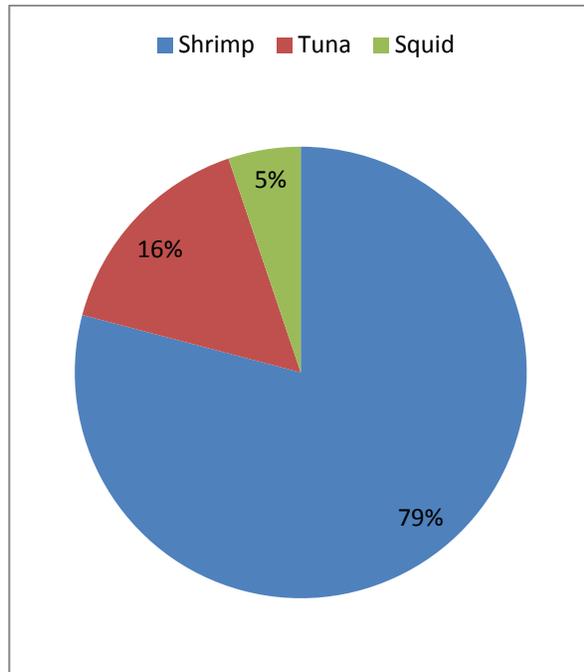
¹⁹ Irfany, Robby, Tempo, Menteri Susi Bagikan 5.000 Kapal Gratis Awal 2016, 31 Agustus 2015, available at : <https://m.tempo.co/read/news/2015/08/31/090696441/menteri-susi-bagikan-5-000-kapal-gratis-awal-2016>

²⁰ Sari, Elisa Valenta, CNN Indonesia, Ekspor Perikanan Naik Signifikan, Menteri Susi Merinding, 18 May 2015, available at : <http://www.cnnindonesia.com/ekonomi/20150518201340-92-54026/ekspor-perikanan-naik-signifikan-menteri-susi-merinding/>

Figure 4 : Fisheries Export in Q1 2015

| Commodity | Export Value (in US\$) |
|-----------|------------------------|
| Shrimp | 449,95 million |
| Tuna | 89,41 million |
| Squid | 29,51 million |

Source : Ministry of Marine Affairs and Fisheries²¹



Other than paying close attention to production, fisheries exports require quality control, because many countries implement strict regulation when it comes to fishery products. International standards have become a challenge for Indonesian fishmongers and exporters. To export to the United States, for example, fishery products must have a description of how the fish were caught and processed, as well as international food safety certification²².

Other than fisheries, cold storage demand is closely related to other food production such as beef and poultry. The Indonesian government targeted beef production at 580 thousand tons in 2015, whilst at the same time reducing beef cattle imports. Moreover, in poultry production, the government expects growth to be between 7-10% every year.

Table 5 : Beef Meat Production 2011 – 2015 (in Tons)

| 2011 | 2012 | 2013 | 2014 | 2015* |
|---------|---------|---------|---------|---------|
| 485 333 | 508 906 | 504 818 | 497 670 | 523 927 |

*preliminary figure

Source : Ministry of Agriculture²³

²¹ Ibid p. 14

²² Tribun News, Paman Sam Tolak Ikan Tuna Indonesia, 13 March 2016, available at <http://jambi.tribunnews.com/2016/03/13/paman-sam-tolak-ikan-tuna-indonesia>

²³ Ministry of Agriculture Statistics and Information System, available at : http://www.pertanian.go.id/ASEM2015-NAK/Prod_DagingSapi_Prop_2015.pdf

Table 6 : Poultry production 2011 – 2015 (in Tons)

| Type | 2011 | 2012 | 2013 | 2014 | 2015* |
|---------|-----------|-----------|-----------|-----------|-----------|
| Broiler | 1 337 911 | 1 400 470 | 1 497 873 | 1 544 379 | 1 627 106 |
| Native | 264 795 | 267 492 | 319 599 | 297 653 | 313 996 |
| Layer | 62 145 | 66 050 | 77 135 | 97 195 | 95 646 |

*preliminary figure

Source : Direktorat Jenderal Peternakan²⁴

Despite the growing production numbers, the capacity of available cold storage is significantly low when compared to the country's food production.

In 2014, only 7,2 million tons of cold storage was available for fisheries, 400,000 tons for beef, and 1,9 million tons for poultry²⁵. Cold storage capacity only grew by 6% in the past year, which is not balanced with the growth in fresh products. More investment in cold chain systems and cold storage facilities will help the government to meet their targets and to preserve the quality of fresh products²⁶.

The lack of cold storage available for fishery products was addressed by the Fish Cannery Association (APIKI-IFCA). The association noted a decline in fresh fish exports in 2015 as the Ministry of Marine Affairs and Fisheries banned on-board trade. The disadvantage of this regulation is that the fishermen have to make the journey back to fishing ports in order to sell their catch. Without cold temperature storage, the fish are no longer as fresh when they reach the ports²⁷. Moreover, local ships are not equipped with cold storage and fishermen rarely consider cold storage and temperature control as important factor in developing their business. A better integrated supply chain in the distribution of fresh fish to the local fish processing industry is also needed.

To respond to this concern and to support the Indonesian export trade, the Ministry of Marine Affairs Fisheries is working closely with associations and local fishermen groups to implement proper product storing and processing. Together with *Asosiasi Rantai Pendingin Indonesia* (ARPI/Indonesia Cold Chain Association), the ministry holds coaching and training for local fishermen, first by introducing the importance of cold chains to their business, followed by sessions for cold storage operators so that they are able to manage and maintain the facilities²⁸.

²⁴ Ministry of Agriculture Statistics and Information System, available at : http://www.pertanian.go.id/ap_pages/mod/datanak

²⁵ Fiskal, Asosiasi Rantai Pendingin Harapkan Stimulus Fiskal, Jakarta, 28 February 2014, available at : http://www.fiskal.co.id/berita/fiskal-2/1563/asosiasi-rantai-pendingin-harapkan-stimulus-fiskal#.VwM_50fD4kN

²⁶ International Indonesia Seafood and Meat Expo, Press Release, 2015, available at : <http://www.iism-expo.com/press-release/86-press-release#.VwM3jkfD4kM>

²⁷ The Jakarta Post, Lack of cold storage hampers fish processing industry, 2 January 2016, available at : <http://www.thejakartapost.com/news/2016/01/02/lack-cold-storage-hampers-fish-processing-industry.html>

²⁸ Yasni, Op. cit p. 10

Besides training, the Ministry will provide transport ships as part of the fisheries cold chain. From a total of 5000 ships provided by the Ministry of Marine Affairs and Fisheries, only half of them are equipped for fishing and will be distributed to fishermen. The remaining number will function as transport ships, fully equipped with temperature controlled storage to distribute the catch²⁹.

On the infrastructure side, the Ministry of Marine Affairs Fisheries aims to build 250 cold chains across the Indonesian archipelago by 2019, with 60% of the cold chain to be built in the eastern part of the country where most of the fishing grounds are. A pilot project has been implemented in several places such as Muara Baru, Muara Angke, Bitung, Belawan, and Surabaya. Furthermore the ministry wants to build ice flake factories in 333 spots in order to supply the cold storage and cold chains with proper refrigerant. Currently fishermen use ice blocks that take up a lot of space and are less hygienic. Ice flakes will provide better temperatures, take up less space, are more hygienic, and have better endurance³⁰.

In the eastern part of Indonesia, where fishery production reaches 65% of national production, cold storage is available in the provincial capital instead of fishing ports. Consequently, most fishermen don't bother to send their product to cold storage, as it is too far from the coastline. This means that cold storages are left empty most of the time. The ministry plans to develop smaller sized storage, with capacities of 50 – 100 tons, to be located near the coastline, so they can be easily reached by fishermen³¹.

2.3. Pharmaceuticals and Demand of Cold Storage

Pharmaceutical manufacturers often deal with temperature sensitive products, such as customised vaccines for rare diseases, or specimens for laboratory tests. These products often include high-value active ingredients with short shelf lives and carry strict temperature requirements. Product specialisation and sensitivity requires specific logistics services which can maintain the requirements to preserve the products. Even after being delivered, pharmaceutical products must also be stored properly to ensure quality³².

Cold storage and cold chain logistics for the pharmaceuticals sector must ensure that consistent temperature control and management systems are in place throughout the entire transport process, from delivery to the final shipment. Despite the growing demand, there are not many logistic companies or cold storage operators focusing strictly on this sector. With the National Health Program being implemented, the cold chain system needs to be made available across Indonesia.

²⁹ Irfany, Op. cit p 14

³⁰ Yasni, Op. cit p. 10

³¹ Yasni, Op. cit p. 10

³² Terry, Lisa, Inbound Logistics, The Big Chill: 10 Trends in Cold Chain Logistics, July 2015, available at : <http://www.inboundlogistics.com/cms/article/the-big-chill-10-trends-in-cold-chain-logistics/>

Great effort has been made to establish a cold chain for pharmaceutical products in Mataram, Nusa Tenggara Barat. The Lombok Health Agency in Mataram is responsible for bringing in vaccines such as Pentabio (Dpt Hb Hib) and those for measles, diphtheria and tetanus (DT), tuberculosis (BCG) and hepatitis B, for the local government health program. The vaccine handling process is standardised and regulated by World Health Organization in which temperature control is considered one of the most important factors. Most vaccines must be stored at a temperature of between two – eight degrees Celsius, while Polio vaccines must be kept at – 20 degree Celsius. After delivery, the Lombok Health Agency officer must pay close attention of the vaccine vials and monitor the temperature closely using various indicators provided by the manufacturer. For the polio vaccines, the local government provides three freezers; all of which are available for use. In the future, the agency is expected to build more cold storage to keep more vaccines and other pharmaceuticals products. The company involved in this program is Bio Farma, Indonesia's largest vaccine manufacturer. Bio Farma supplies multiple vaccines across the Indonesian region where various immunisation programs are currently being held³³.

Pharmaceutical companies generally handle their own product distribution, operating cold storage and managing cold chains specifically for their temperature sensitive products. As the size and volume of the product is not large, the company operates insulated vehicles and uses smaller containers, whilst at the same time maintaining cold temperature during the transport.

The scheme above is currently being implemented by the Ministry of Health, in which they appoint a company to handle the transport of vaccines and/or other pharmaceutical products. Currently, the Provincial governments of Jakarta, Bandung, Surabaya and Jogjakarta are planning to develop cold chain systems at the provincial level, in order to smoothly assist the movement of temperature sensitive pharmaceutical products. The cold storage and cold chain projects will be open for companies through a tender process³⁴.

2.4. Modern Retail Outlets and Demand of Cold Storage

Convenience stores, hypermarkets and supermarkets characterise the modern Indonesian market scene. Local companies like Alfamart and Indomaret mainly represent convenience stores, while Transmart Carrefour dominates the hypermarket sector. The food retail sector is not only composed of domestic companies, but also of foreign stakeholders like Giant & SuperIndo. Despite the growing interest in modern retail stores, it is important to mention that traditional stores such as “wet markets” and “independent small groceries” continue to play an important role³⁵.

³³ Siniwi, Ratri M, Jakarta Globe, West Nusa Tenggara Implements Cold Chain System for Vaccine Handling, 12 April 2016, available at : <http://jakartaglobe.beritasatu.com/business/lombok-health-authority-implements-cold-chain-system-in-vaccine-handling/>

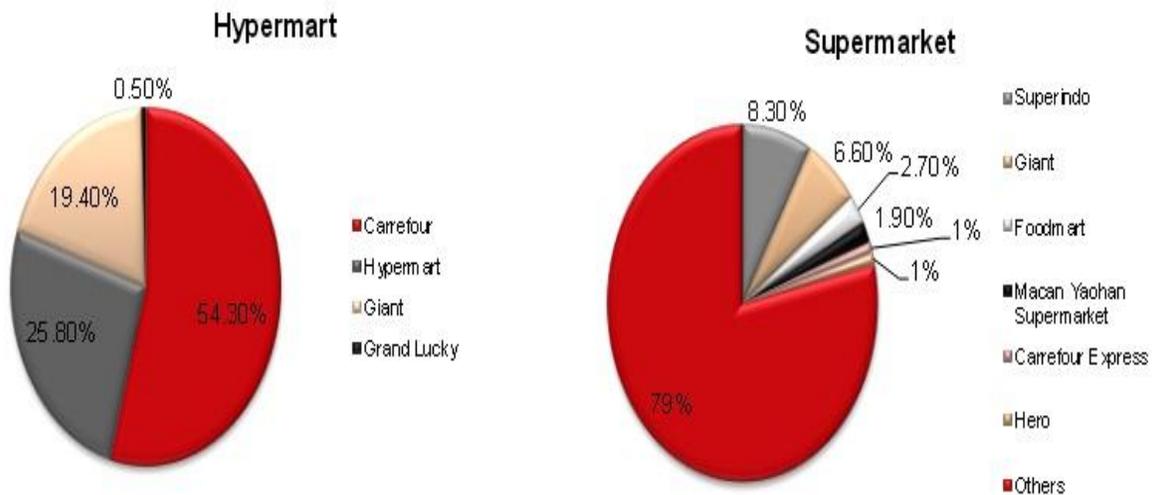
³⁴ Yasni, Op. cit p. 10

³⁵ EIBN (EU-Indonesia Business Network) Sector Reports 2014, Food & Beverage.

However, despite the growing trend towards better quality products and favor towards modern supermarkets, traditional markets retain a dominant position in Indonesian consumer activity, and are still the main source of food purchases³⁶.

Many agriculture and food products, either from local farmers or imported, are sold in outlet supermarkets with a cold chain which is usually equipped with adequate cold storage. For example, supermarkets targeting upper class customers, such as Ranch Market, have cold storages in each outlet, as well as mobile cold temperature containers for product transport. Temperature controlled transport is a convenient way to move many products from the main storage to outlets. Other supermarket chains such as Transmart Carrefour, Giant, and Lotte apply this distribution method as well. Furthermore, smaller retail chains have refrigerators available in the outlets, whilst head office controls their main cold storage³⁷.

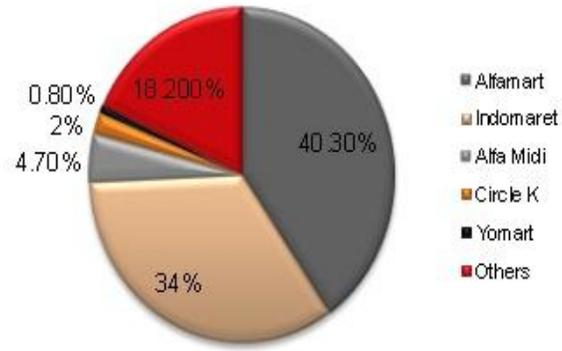
Figure 5 : Modern Retail Markets - Market Share Concentration Across Modern Retail Stores



³⁶ EIBN (EU-Indonesia Business Network) Sector Reports 2014, Food & Beverage.

³⁷ Yasni, Op. cit p. 10

Convenience Store



Source: USDA, from Euromonitor data via EIBN FnB report

IV. Key Players

4.1 Food and Beverages

Several food and beverage companies have built their own cold storage and have established cold temperature supply chains to ensure their products are protected and well received by the customer. The most notable companies are PT. Diamond Cold Storage, PT Unilever Indonesia, PT Bonekom Servistama Compindo (BOSCO), and Gunung Sewu Group.

PT. Diamond Cold Storage was founded in January 1974 as a PMA (foreign direct investment company) by three partners. Mr. W.T. Chen was the local partner, with Cold Storage Company Ltd. of Singapore and Amatil Australia (now Amatil Coca Cola) as the foreign partners. After five years, Mr. W.T. Chen took over, and the company grew. Diamond created their own refrigerated distribution network, followed by expansion into the food service and general trade segments. PT. Diamond Cold Storage also provides services for international franchises such as McDonalds, and has become a trusted supplier to many other international franchises.

Companies like Charoen Phokpand Indonesia and Japfa Comfeed Indonesia have also built cold storage for their poultry and frozen, processed food. These companies also secure their frozen food distribution by establishing integrated cold chains and provide refrigerators to the convenience stores that sell their products.

4.2 Pharmaceuticals

Most of Indonesian pharmaceutical manufacturers establish a subsidiary company to fully manage and handle their product distribution. Several big players in the sector are PT Kalbe Farma, PT Kimia Farma, PT Bio Farma, and PT Pharos.

Kalbe Farma's Distribution and Logistics Division operates the widest distribution coverage for pharmaceutical products in Indonesia, reaching across 33 provinces. The distribution business is run through a 91.75%-owned subsidiary, PT Enseval Putra Megatrading Tbk. Kalbe Farma's distribution network indirectly covers roughly 1 million outlets in Indonesia, comprising pharmaceutical outlets such as hospitals and pharmacies, as well consumer health and nutritional product outlets. In addition to distributing the Company's own products, the Distribution and Logistics Division allocates about one third of its capacity to serve the needs of third party principals, to achieve higher efficiency on capacity utilisation and better overhead cost sharing³⁸.

³⁸ Kalbe Farma Company Profile, available at : <http://www.kalbe.co.id/ProductsandServices/DistributionLogistics.aspx>

4.3. International Logistic Companies

International logistic companies also take part in Indonesia's cold storage and cold chain operations, for example; Maersk Line and Mitsui. Maersk Line owns cold temperature containers with a partition that enables them deliver multiple types of products at once, whilst keeping them all at specific temperatures.

Maersk Line, which has been operating in Indonesia since 1928, is also looking to invest in the Indonesian logistics sector through its logistics arm, Damco³⁹. Following the Government's maritime campaign and new regulation announcement, Maersk line might look at the cold storage sector as their next development plan in Indonesia.

Damco's local unit in Indonesia has four freight container station facilities as of August 2013 and five commercial offices as of July 2014, mostly catering to the industrial manufacturing, oil and gas, mining and retail sectors⁴⁰.

³⁹ Wee, Vincent, Seatrade Maritime News, Maersk eyes investment in the Indonesian logistics sector, 8 February 2016, available at : <http://www.seatrade-maritime.com/news/asia/maersk-eyes-investment-in-the-indonesian-logistics-sector.html>

⁴⁰ Manuturi, Vanesha, Jakarta Globe, Logistic Arm of Maersk Line Shows Interests in Indonesia's Plan to Open Cold Storage Facilities for Foreigners, 4 February 2016, available at : <http://jakartaglobe.beritasatu.com/business/logistic-arm-maersk-line-shows-interests-indonesias-plan-open-cold-storage-facilities-foreigners/>

V. Government Projects and Regulation

Cold storage and cold chains offer potential for partnerships and investment, as the government has opened the sector to foreign investment. Local and international logistics companies can take full advantage of this policy and have taken position in the Indonesian market. The challenge remains, however, in infrastructure and reliable electricity supply, especially in rural areas.

5.1. Government Projects

Indonesia looks set to emulate a move by Abu Dhabi and will establish a national cold storage warehouse for fresh produce. The government has engaged the State Logistic Agency (BULOG) to develop a large-scale cold store which would help to store domestically produced fruits and vegetables and, in the long run, stabilise prices⁴¹.

The Logistic Agency (Bulog) is studying the feasibility of building a cold storage facility in the Greater Jakarta area, and later in other regions. This study includes research on source issues, goods movement, distance covered during distribution, storage capacity needed and infrastructure issues, and is expected to start in 2016. The budget prepared for the BULOG cold storage project will be around USD 152 million, coming from the state capital fund⁴². In the upcoming year, the Indonesian government will allocate US\$17.1 million for the opening of 58 cold storages and 38 ice flake factories⁴³.

The Government of Indonesia also aims to upgrade many fishing ports in off-grid and under-serviced areas to 'eco-fishing-port' status, with both financial and energy self-sufficiency. It is also committed to mobilising renewable energy to further expand the cold chain in those regions⁴⁴. Most traditional Indonesian fish markets have little or no ice and no access to cold storage. To build a cold storage, is not an easy task. As most of the fishing ports are located on the coast, lack of electricity and infrastructure facilities make it difficult to set up proper storage.

Without the proper storing and temperature controls, it is difficult to maintain the quality and freshness of fishery products. The Ministry of Marine Affairs and Fisheries has established cold storage pilot projects in several fishing ports such as Muara Baru, Muara Angke, Bitung, Belawan, Surabaya, Bena⁴⁵.

⁴¹ Jones, Matthew, Indonesia eyes cold storage warehouse, Hong Kong, 18th September 2015, available at : <http://www.fruitnet.com/asiafruit/article/166507/indonesia-eyes-cold-storage-warehouse>

⁴² Hidayat, Ali, Tempo, Bulog To Build Cold Storage Next Year, Jakarta, 18 September 2015, available at : <http://en.tempo.co/read/news/2015/09/18/056701816/Bulog-To-Build-Cold-Storage-Next-Year>

⁴³ The Jakarta Post, Lack of cold storage hampers fish processing industry, Jakarta, 2 January 2016, available at : <http://www.thejakartapost.com/news/2016/01/02/lack-cold-storage-hampers-fish-processing-industry.html>

⁴⁴ REEEP, Financing solar-powered cold-storage for Indonesian fishing communities, available at : <http://www.reeep.org/projects/financing-solar-powered-cold-storage-indonesian-fishing-communities>

⁴⁵ Yasni, Op. cit p. 10

From the association's side, ARPI also plans to launch an online platform for the cold storage sector, so that companies and potential clients can easily view and access the profile of available storage and later proceed to business negotiation⁴⁶.

5.2. Regulations

In August 2013, the Indonesian government took emergency measures to restore financial stability in the country, after the growth of its current deficit⁴⁷. In support of these measures, the 2014 Negative List for Investment was issued. In the 2014 Negative List for Investment, as stipulated in the Presidential Regulation No. 39 of 2014, Cold Storage businesses are open to foreign investment, with certain restrictions in regard to the maximum foreign share ownership as follows⁴⁸:

- A maximum of 33% foreign share ownership, for cold storages located in Sumatra, Java and Bali
- A maximum of 67% foreign share ownership, for cold storages located in Kalimantan, Sulawesi, Nusa Tenggara, Maluku, and Papua

This restriction for foreign investment in cold storage is in stark contrast to the previous DNI⁴⁹, where cold storage did not get any mention at all and was fully open for foreign investments in Indonesia.

With this restriction in place, foreign investments in cold storage projects plummeted. According to BKPM statistics⁵⁰, when DNI 2010 was still in force, Indonesia racked up five cold storage foreign investment projects worth USD 72 million from May 2010 to April 2014. In comparison, from the release of DNI 2014 until November 2015, only two foreign investment cold storage projects took place, worth a total of USD 5.3 million, with the addition of a domestic investment project that generated IDR 3.1 billion.

In February 2014, the processed food industry raised their concerns about the need for more investment in cold storage. The Indonesia Cold Chain Association explained that the food cold chain sector needed an investment boost of around USD 400 million, to keep up with domestic consumption in Indonesia, which is predicted to rise within the next 10 years⁵¹.

⁴⁶ Yasni, Op. cit p. 10

⁴⁷ Bauerschmidt, Joe, and Kevin J. Murphy. *Indonesia: Turning the Negative List into a Positive*. Jones Day, January 2014, available at : <http://www.jonesday.com/indonesia-turning-the-negative-list-into-a-positive-01-14-2014/>

⁴⁸ Presidential Regulation of the Republic of Indonesia no. 39 of 2014 regarding the List of Lines of Business Closed and Opened with Restrictions for Investment, issued on 24 April 2014 through State Gazette of the Republic of Indonesia no. 93 of 2014. Cold Storage is included in the Annex, in part 5 regarding Trade on point 4.

⁴⁹ Presidential Regulation of the Republic of Indonesia No. 36 of 2010 regarding List Of Lines Of Business Closed and Opened With Restrictions for Investment, issued on 25 May 2010 through State Gazette of the Republic of Indonesia no. 93 of 2014

⁵⁰ Faqih, Fikri. Merdeka Online, "BKPM: Bisnis cold storage diusulkan dibuka penuh untuk asing". 30 November 2015, available at : <http://www.merdeka.com/uang/bkpm-bisnis-cold-storage-diusulkan-dibuka-penuh-untuk-asing.html>

⁵¹ Neraca, *Industri Rantai Pendingin Sulit Berkembang: Fasilitas Fiskal Minim*. Jakarta, 28 February 2014, available at : <http://www.neraca.co.id/article/38959/industri-rantai-pendingin-sulit-berkembang-fasilitas-fiskal-minim>

Additionally, in November 2014, the Minister for Maritime Affairs and Fisheries, Susi Pudjiastuti, announced that she was drafting a number of regulations in relation to investment in the fisheries industry⁵². The motive for this move was the Government's effort to revive the cold storage business, to boost national income from the fisheries sector⁵³.

Finally in February 2016 President Joko Widodo announced a "Big Bang" liberalisation of the economy, dubbed Southeast Asia's largest, through the loosening of foreign investment restrictions in the Negative List⁵⁴. The restructure of the Negative List was announced through the 10th Economic Policy Package, which focused on the projection improvements for Micro, Small, Medium Enterprises and Cooperatives, as well as the change to the Negative List. The change for the DNI has been discussed since 2015 and it has gone through various discussions, public tests, and consultations with ministries, institutions, business people, and others⁵⁵.

One of the points stipulated in the changes to the 2014 DNI was that the Government will open the cold storage sector 100% to foreign investment, as it was before the 2014 DNI. In the consideration process, the Government admitted that one of its main objectives in realising the change was to reduce overlapping regulations between the Ministry of Maritime Affairs and Fisheries and the Ministry of Industry⁵⁶, in regards to the processing of fisheries products.

Despite the promising move, the policy package is still yet to create the positive changes as expected. Correspondence with BKPM confirmed that BKPM is still in the technical deliberation process to follow up on the policy package⁵⁷.

Furthermore, business sectors are already questioning the lack of impact from the policy package. The Indonesian Chamber of Commerce voiced a number of concerns regarding the impact of the policy package⁵⁸, namely that the lack of thorough infrastructure development in the country might dampen the excitement for foreign investors, amongst other things.

In conclusion, from recent developments, it looks like the cold storage industry is headed for significant improvement in terms of foreign investment and regulatory ease of business, provided that the policy package gets implemented soon and the development of infrastructure takes place nationwide.

⁵² Duta, Diemas Kresna. CNN Indonesia, *Menteri Susi Perketat Investasi Perikanan*. 11 November 2014, available at : <http://www.cnnindonesia.com/ekonomi/20141111184329-92-10861/menteri-susi-perketat-investasi-perikanan/>

⁵³ Ibid.

⁵⁴ Owen, Nicholas and Fransiska Nangoy, Reuters, *Indonesia unveils 'big bang' for foreign investment, boldest move in 10 years*. 11 February 2016, available at : <http://www.reuters.com/article/us-indonesia-economy-investment-idUSKCN0VK0JI>

⁵⁵ Cabinet Secretarial Office of Republic of Indonesia, *Government Launches the 10th Economic Policy Package*. 11 February 2016, available at : <http://setkab.go.id/en/government-launches-the-10th-economic-policy-package/>

⁵⁶ Press Release from the Cabinet Secretarial Office of Republic of Indonesia can be accessed on http://apindo.or.id/userfiles/publikasi/pdf/Paket_Kebijakan_Ekonomi_10.pdf

⁵⁷ Mail correspondence between the author with the Investor Relations Unit at BKPM, dated 5 April 2015.

⁵⁸ Tempo Online, *10th Policy Package Yet to Make an Impact on Logistic Industry*, 6 April 2016, available at : <http://en.tempo.co/read/news/2016/04/06/056760142/10th-Policy-Package-Yet-to-Make-an-Impact-on-Logistic-Industry>

VI. Market Entry Recommendation

When doing business in Indonesia, it is important to keep in mind that some infrastructure related to food transport and food conservation might be poorly developed, especially outside the main island of Java. Few cold storage or air-conditioned facilities, or even delivery vehicles exist, despite the size of Indonesia's food production.

6.1. Market Entry Strategies

Despite the challenges, Indonesia is a big market, with a growing economy, offering huge potential for international business players. The investment climate in Indonesia means that foreign investors and foreign companies are being considered as business partners and not business contenders.

International companies can enter the Indonesian market through partnerships with local businesses. The local partner is commonly a distributor-importer company who could help with product sales and put the company in touch with local customers. Foreign companies should establish a partnership with Indonesian companies experienced in winning government tenders, in order to be able to take part in Government development projects.

Meanwhile, companies producing components and materials for refrigeration machines could consider opening a production facility in Indonesia. The Ministry of Industry and the Indonesian Investment Coordinating Board are in discussion on future regulation, in which they would oblige 20% local content for cold storage equipment, for example a compressor. The regulation is expected to encourage foreign investors to establish their manufacturing facilities in Indonesia and later create job opportunities. Tax relief may be granted to companies producing equipment with 20% local content⁵⁹.

The Indonesian Chamber of Commerce and Industry (KADIN Indonesia) has advised foreign investors and cold storage operators to work more closely with local fishermen groups. With close cooperation and mutual trust from both parties, cold storage operators should be able to obtain a continuous supply from local fishermen and thereby prevent storage space vacancy. The future of cold storage business is also closely related to extended training and coaching for local fishermen⁶⁰.

Cold chain and cold storage is one of the most important elements to help improve the quality of dairy product distribution across Indonesia. Instead of working with established dairy producers and dairy importers, logistic companies or cold chain operators could work together with local dairy cooperatives that have a direct connection to farmers. Together they could secure stable

⁵⁹ Interview with ARPI

⁶⁰ Saragih, Samdyasara, Investor Cold Storage Asing Diminta Ajak Koperasi Nelayan, 7 March 2016 available at : <http://industri.bisnis.com/read/20160307/99/525961/investor-cold-storage-asing-diminta-ajak-koperasi-nelayan>

product sourcing and set up local distribution networks. This efficient distribution method could, in return, help local farmers to become more competitive⁶¹.

6.2. Associations and Related Institutions

- **ARPI (Asosiasi Rantai Pendingin Indonesia – Indonesia Cold Chain Association)**

ARPI is a non-profit organisation whose members are the operators of cold storage, logistics companies, and other companies who use cold chain systems in their operational management. ARPI develop the cold chain industry continuously and act as a mediator between industry's needs and government's needs.

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- **Ministry of Marine Affairs and Fisheries Republic Indonesia**

Contact : Partnership and Public Relation Bureau
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- **BKPM (Badan Koordinasi Penanaman Modal – Indonesia Investment Coordinating Board)**

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Fax : +62 21 5252 008
E-Mail : info@bkpm.go.id
Website : <http://www.bkpm.go.id/>

⁶¹ Madani, Manuel A., Investment opportunities Dairy Indonesia 8 September 2015
<https://www.linkedin.com/pulse/investment-opportunities-dairy-indonesia-m-a-manuel-madani>

Exhibition and Trade Fairs

- **International Indonesia Seafood & Meat (IISM) 2016**
28 – 30 September 2016
Jakarta International Expo Kemayoran

This is an exhibition that convenes high-level decision makers, buyers, and suppliers from cold chain and refrigeration industries from across the globe. Running in its third annual edition in 2016, this leading exhibition is now focused on cold chain technology, which includes; cold storage infrastructure, temperature controlling, IT and handling solutions for cold storage, as well as cold chains and cold supply chains. The event features technology providers showcasing their latest solutions related to cold chain technology applied in seafood and meat industries. It is a perfect platform tailored specifically as a bridge that connects potential buyers and qualified sellers in the industry. It's a lucrative event that offers comprehensive business and networking opportunities.

Organizer Contact:

PT. PELITA PROMO INTERNUSA

Kompleks Perkantoran Graha Kencana Blok CH-CI

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