COLD CHAIN SYSTEM
UNTUK INDUSTRI LOGISTIK PETERNAKAN

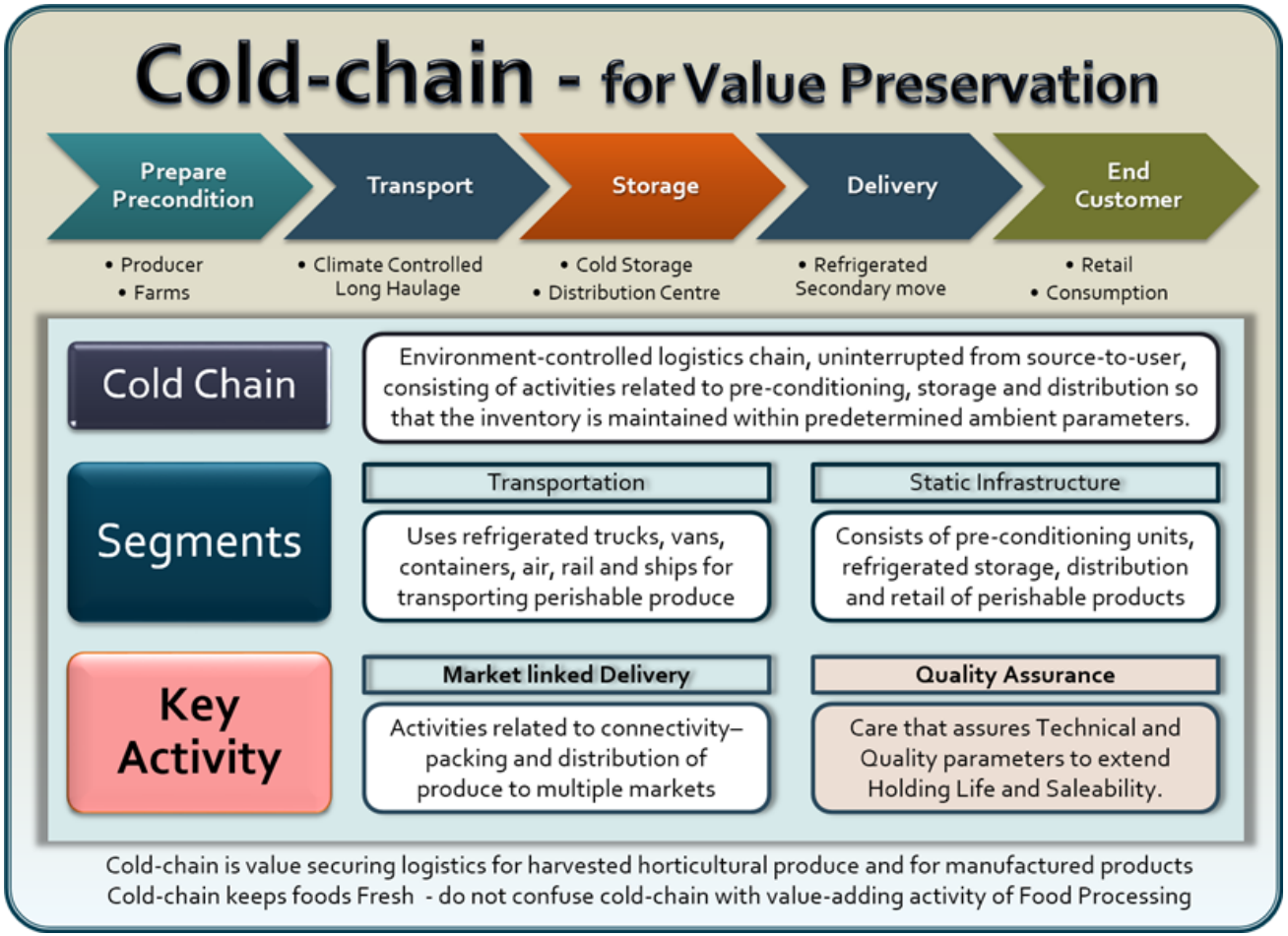
ASOSIASI RANTAI PENDINGIN INDONESIA

HASANUDDIN YASNI

INDONESIA COLD CHAIN ASSOCIATION

COLD CHAIN LOGISTICS DEFINITION

Cold Chain: a network of refrigerators, cold stores, freezers and cold boxes organized and maintained so that foods are kept at the right temperature to remain potent during foods transportation, storage and distribution from factory to the point of use.



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WHAT IS COLD CHAIN SYSTEM
(1) POST HARVEST CHAIN

- **Increasing emphasis on higher value farm products to meet the changing diets of urban consumers has focused renewed attention on post-harvest systems, while unacceptably high losses due to poor handling and lack of appropriate infrastructure have reduced economic benefits to small producers.**
- **Post-harvest activities are an integral part of the food production system and the aim is to promote best practices for post-harvest handling and management along the entire food supply chain, focusing on a broad spectrum of operations and stakeholders in traditional and modern marketing systems. The ultimate goal of the system is to deliver high quality, safe food to consumers.**
- **A working knowledge and understanding of the technical factors that impact on the safety, quality and value of agricultural produce, an appropriate infrastructural support base, proper logistical arrangements, good stakeholder interaction within post-harvest value chains and effective government support services are prerequisites to gaining market access, reducing post-harvest losses and increasing returns to producers.**

WHAT IS COLD CHAIN SYSTEM
(2) SUPPLY CHAIN

- Supply Chain efficiency relies heavily on the timeliness of the interconnected pieces all the way from production to the consumer's hands. This journey becomes even more critical for perishable goods like food and more importantly pharmaceuticals. Lack of proper and reliable temperature control is one of the most important reasons for wastage in supply chain. This makes end-to-end visibility in cold chain even more crucial that needs to go beyond barcode, RFID scanning and supply chain management software.
- With Online Remote Monitoring solutions with real-time monitoring, cold chain operators can maintain the integrity of the goods and avoid wastage. This also helps them meet industry regulations for ensuring consumer safety.
- So whether you are running a cold storage or cold chain transportation, with online remote monitoring you can monitor your operations in real-time and get timely alerts in case of deviations.

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WHAT IS COLD CHAIN SYSTEM
(3) LOGISTICS CHAIN

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

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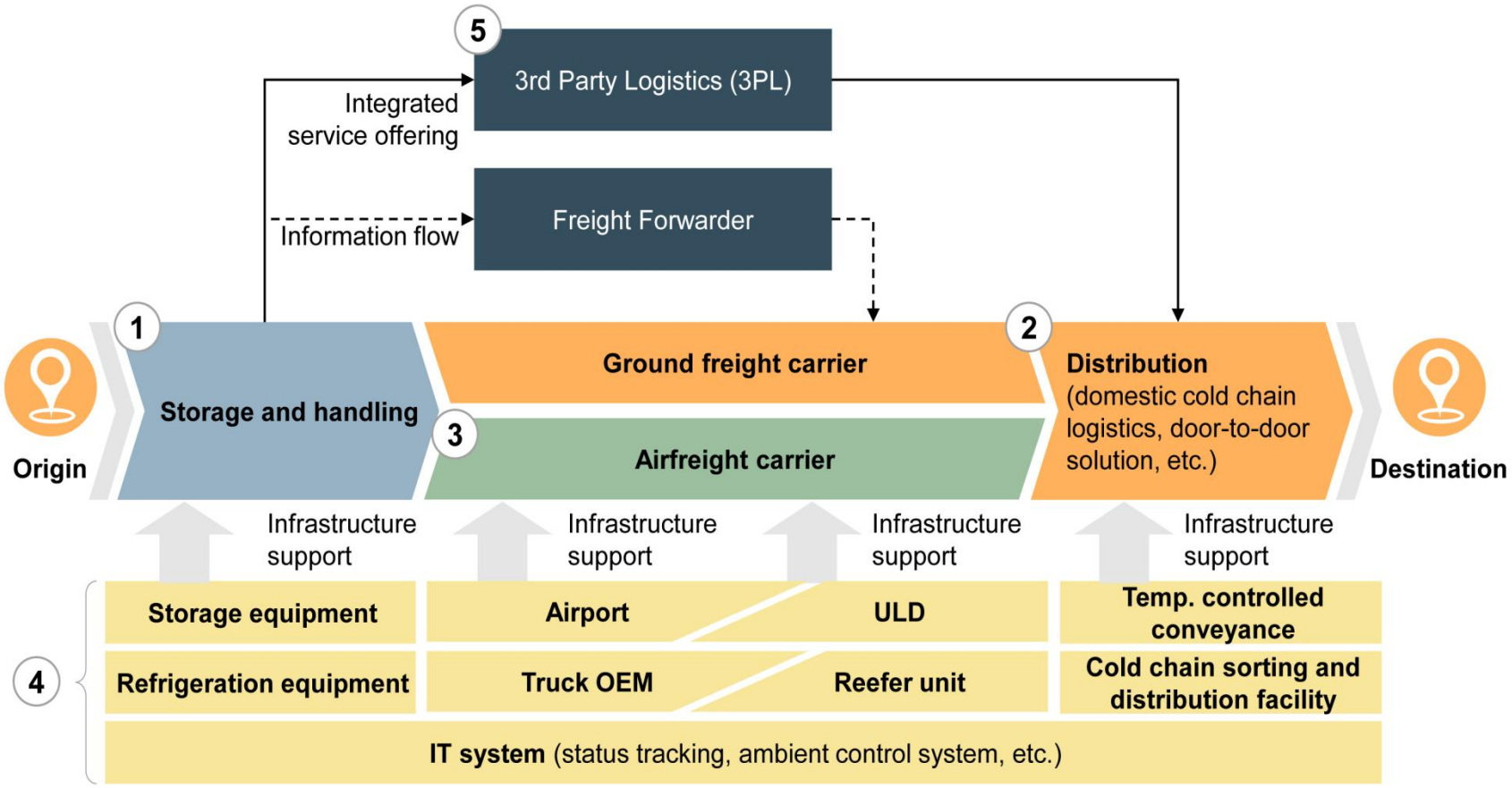
COLD CHAIN LOGISTICS CONNECTING ITS INFRASTRUCTURE

Cold chain logistics industry value chain

ILLUSTRATIVE



Source: L.E.K. analysis

A FLOW DIAGRAM OF RED MEAT SLAUGHTERHOUSE (1)

SLAUGHTERING

- **In slaughterhouses animals are received and kept around in stockyards and pens for 1 day. The animals are watered, but in most cases not fed unless they are kept more than 1 day.**
- **The animals are then driven from the holding pens to the slaughtering area where the following activities take place:**

  - Stunning;- Suspension from an overhead rail by the hind legs;

  - Sticking and bleeding over a collecting trough. The collected blood may be sewered or processed;

  - Hide removal (cattle) or scalding and dehairing (hogs) ;

  In some plants hogs are skinned to eliminate scalding and dehairing. Scalding is a method to loosen hair before removal. For several minutes the hogs are held in a scalding tank at 45˚C to 65˚C. After scalding, the hogs are mechanically dehaired by abrasion and singed in a gas flame to complete the hair removal process.- Decapitation :

A FLOW DIAGRAM OF RED MEAT SLAUGHTERHOUSE (2)

Decapitation:

- **Opening of the carcass by cutting;**
- **Inspection of the carcass;**
- **Evisceration (removal of intestines and internal organs);**
- **Splitting and cutting of the carcass; and**
- **Chilling or freezing.**

MEATPACKING

- **Many large scale plants ship whole graded carcasses to retail markets, others perform some on-site processing to produce retail cuts. The processes are the following:**
- **- Cutting and deboning; and- Meat processing. This includes a variety of operations amongst which grinding, mixing with additives, curing, pickling, smoking, cooking and canning.**

A FLOW DIAGRAM OF RED MEAT SLAUGHTERHOUSE (3)

RENDERING

Rendering is a heating process for meat industry waste products through which fats are separated from water and protein residues for the production of edible lards and dried protein residues. Commonly it includes the production of a range of products of meat meal, meat-cum-bone meal, bone meal and fat from animal tissues. It does not include processes where no fat is recovered.

There are basically two different rendering processes:

- High temperature rendering: through cooking or steam application (5 systems are known: (1) simple cooking; (2) open pan rendering; (3) kettle rendering; (4) wet rendering; and (5) dry rendering.
- Low temperature rendering (around 80˚C). This process requires finely ground material and temperatures slightly above the fat melting point. It results in a better quality lard. The rendering at low temperatures is a highly sophisticated process requiring large throughputs and trained personnel. For many developing countries the system is not suitable.

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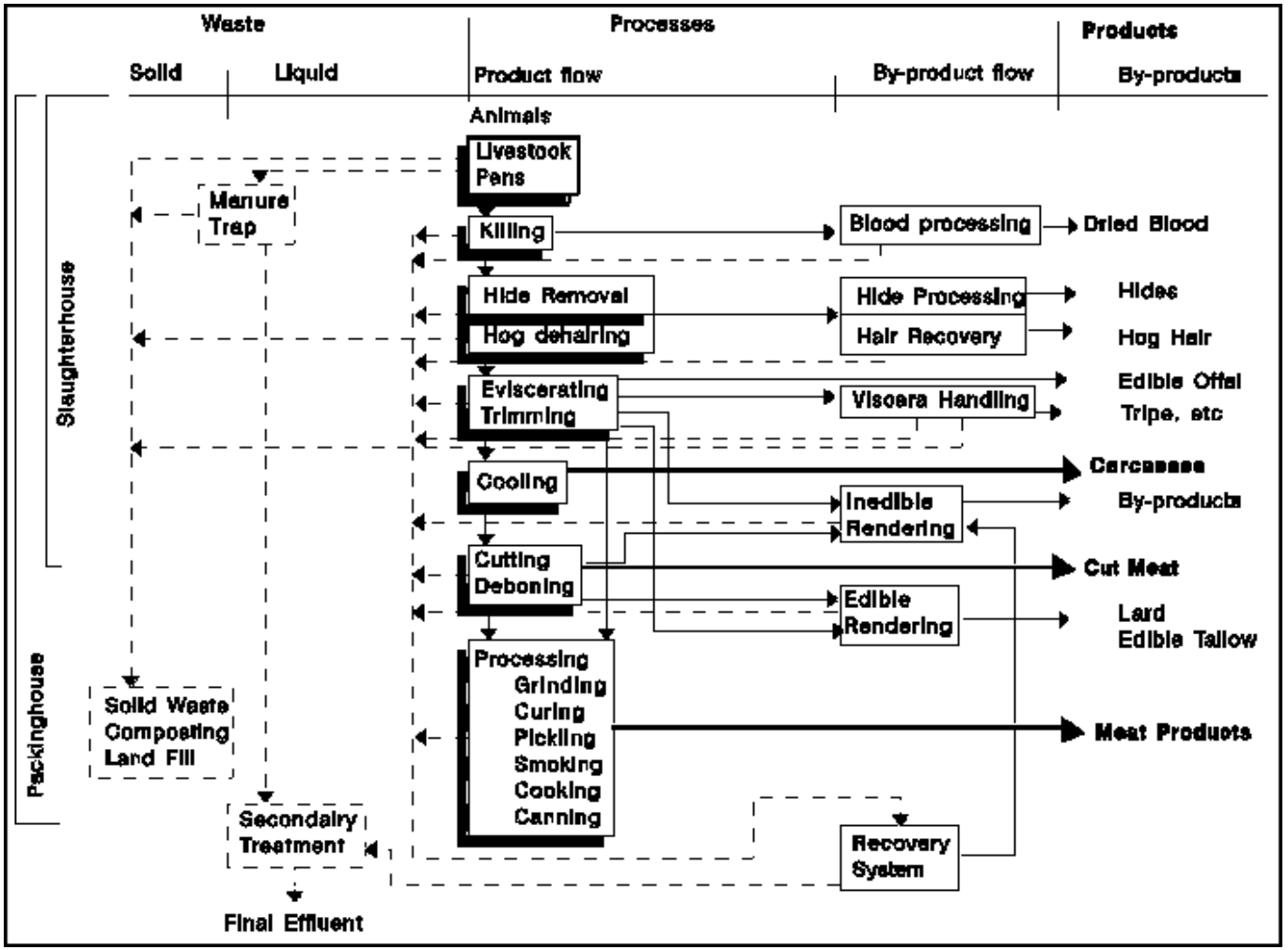
A FLOW DIAGRAM OF RED MEAT SLAUGHTERHOUSE



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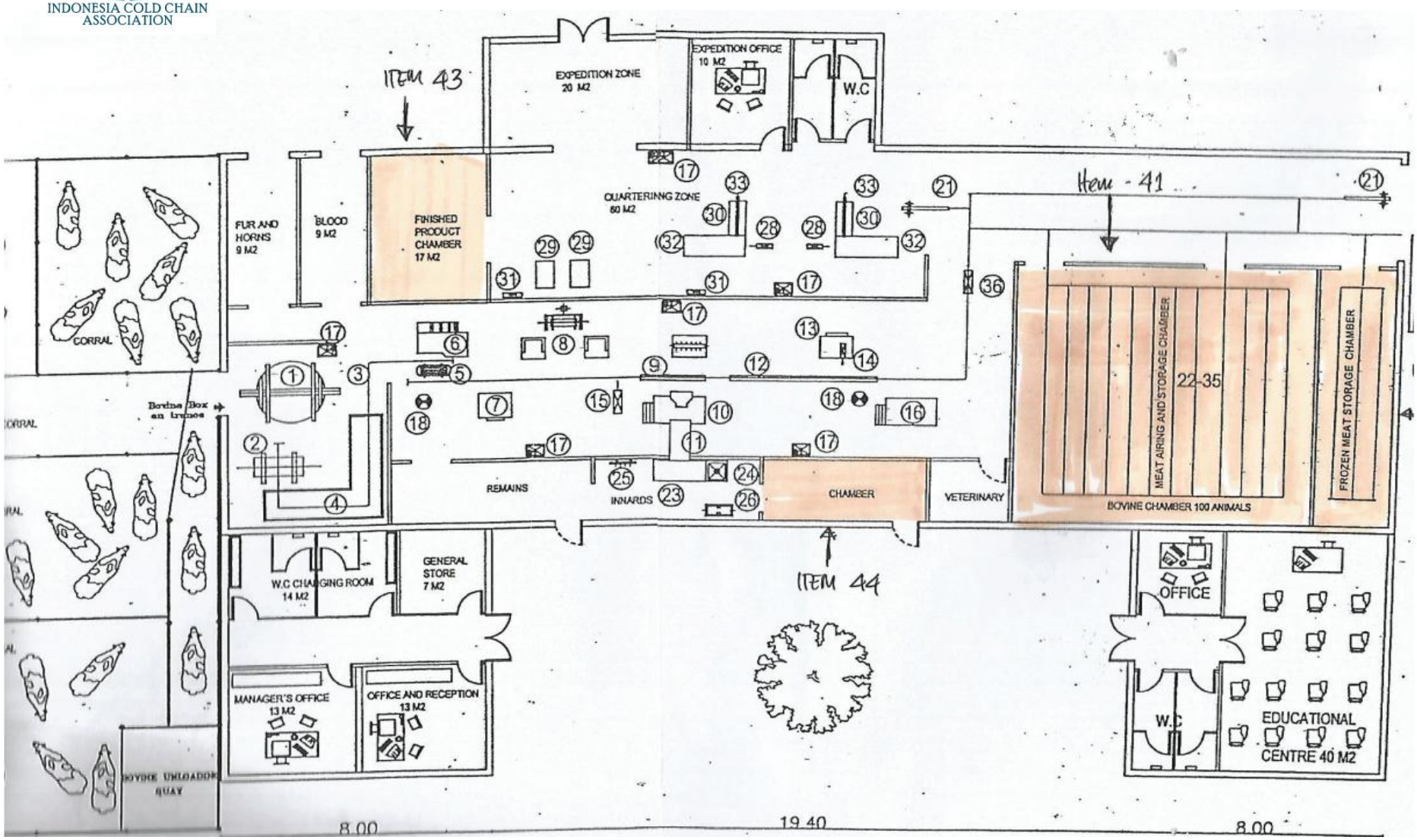
PLANT LAYOUT
OF RED MEAT SLAUGHTERHOUSE



ALUR PROSES BERDASAR PLANT LAYOUT

1. Tempat istirahat sapi / animal rest area
2. Proses stunning / pemingsanan sapi sebelum di sembelih
3. Penyembelihan sapi
4. Proses hanging dan dressing sapi
5. Pemotongan whole carcass menjadi 1/4 carcass
6. Proses aging di cooling chamber
7. a. Proses Boning dan fresh chilled meat product atau
7. b. Proses pembekuan di frozen chamber

LACK OF COLD CHAIN IMPLEMENTATION

1. Pengiriman ternak hidup menggunakan truk terbuka, baik lewat darat maupun laut.
2. Rantai pasok (supply chain) memeliki mata rantai yang panjang: peternak, belantik, pasar hewan, pedagang pengumpul, pejagal, RPH, baru ke konsumen.
3. Fasilitas yang masih kurang, seperti: RPH berstandar nasional, informasi industri serta tarif, dan minimnya pengetahuan tentang cold chain.
4. Fluktuasi suhu yang tidak baik selama pendistribusian.
5. Sarana kontrol temperatur dan data logger.
6. Prosedur loading unloading yang beragam dan tidak disiplin.
7. Penyebaran area produksi yang terkotak-kotak dan tidak di support penuh oleh RPH berstandard serta infrastruktur cold chain system yang baik.

KONSUMSI NASIONAL RED MEAT DAN KAPASITAS LOGISTIK

- **Konsumsi per kapita : 2,56 kg atau 654.000 ton (2015), 2,85 kg atau 738.000 ton (2016). 64% atau setara dengan 416.000 ton atau 2.447.000 di klaim dipasok oleh lokal (2015) dan di tahun 2016 naik 10% dengan persentase inpor naik.**
- **Kapasitas terpasang logistik berpendingin hanya dapat mensupport 25% produksi daging lokal dan 80% dimanfaatkan sebagai rantai dingin daging impor, atau setara hanya 44% dari kebutuhan nasional per tahun (2016).**

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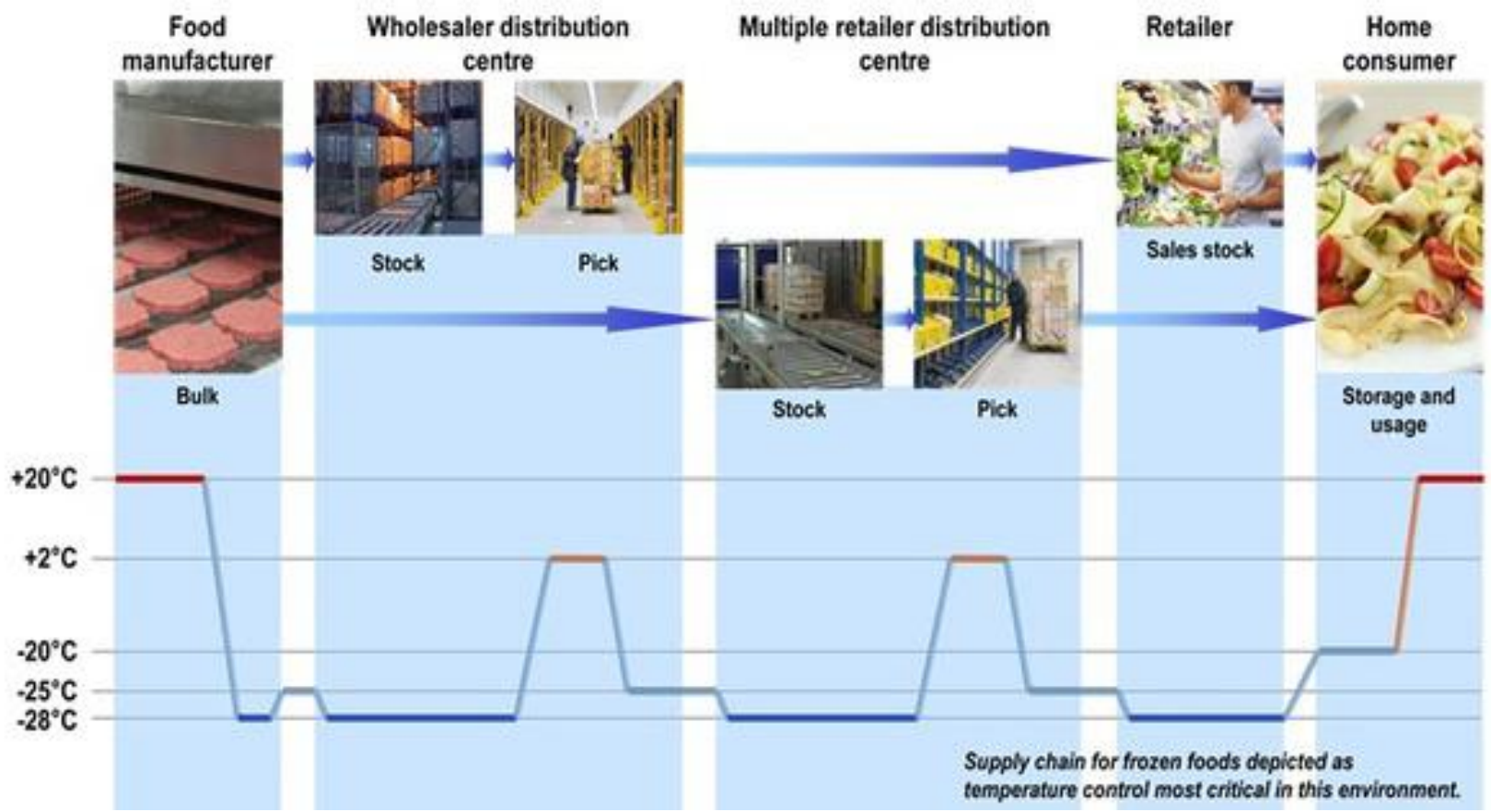
TEMPERATURE RANGE CONTROL OF RED MEAT



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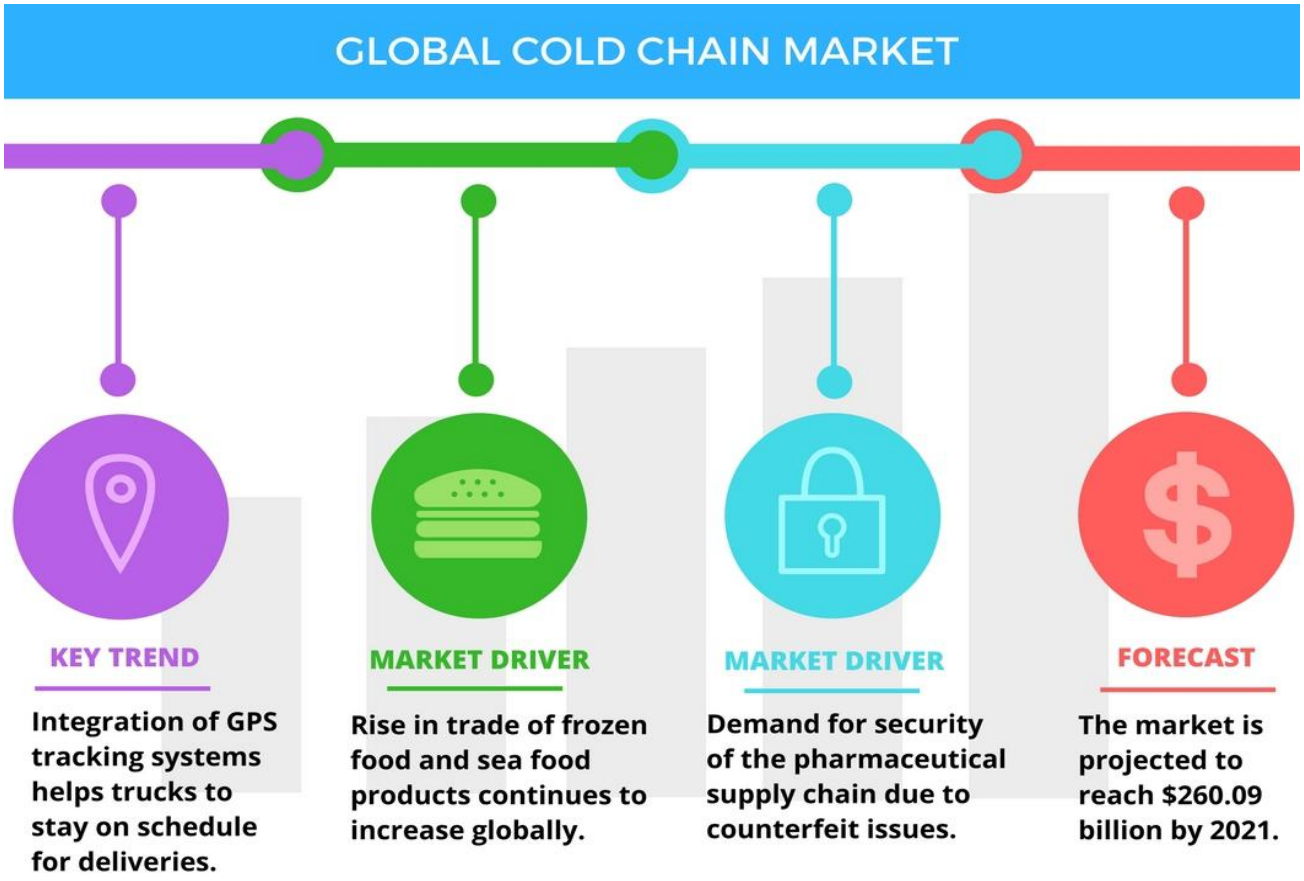
GLOBAL COLD CHAIN MARKET

with the sustained economic development, fast increase demand for food, drugs and cosmetic, world cold chain logistics will undergo a rapid growth



WITH GOOD COLLABORATION, WE CAN DEVELOP GOOD C/C LOGISTICS INFRASTRUCTURE