

Eco-friendly Cold Chain Solution utilizing insulation boxes and visualization of delivery

May 17, 2024

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New Business Development Department, Mobility Operations
Dai Nippon Printing Co., Ltd.

DNP

Outline of DNP Group



Established Oct 9, 1876

Capital 927 million USD

Annual Sales 10,893 million USD

Employees 36,246



Headquarters in Tokyo



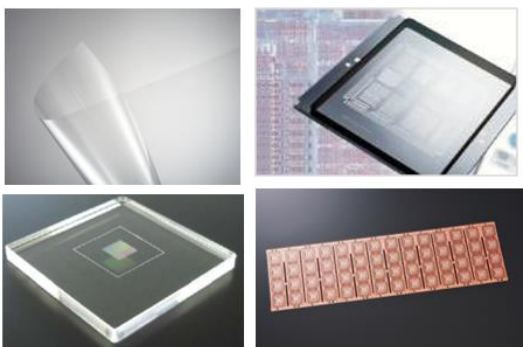
Japan	34 Sales offices
	57 Production bases
Overseas	24 Sales offices
	16 Production bases

Net Sales by Segment



Electronics

15% 1,532 million USD



Smart Communication

52% 5,423 million USD



Life and Healthcare

33% 3,442 million USD



Business Operations

Smart Communication

- Information Innovation
- Publishing Innovation
- Imaging Communication

Life and Healthcare

- Life-design
- Life Space Materials
- Mobility**
- High-advanced Material

Electronics

- Opt-electronics
- Fine-device

**Eco-friendly Cold Chain Solution
utilizing insulation boxes and visualization of delivery**

Chilled Pharmaceutical Transportation in Manila, Philippines



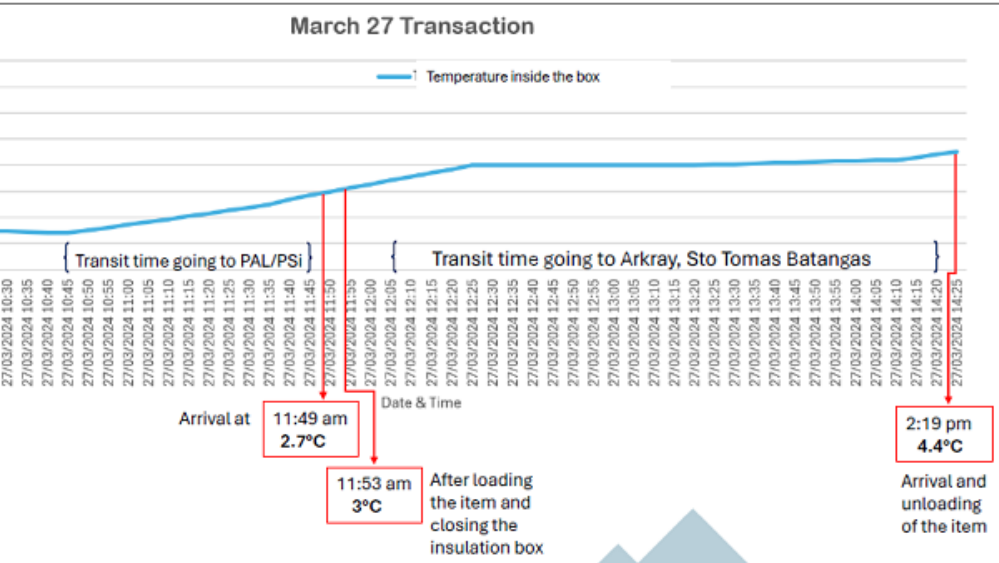
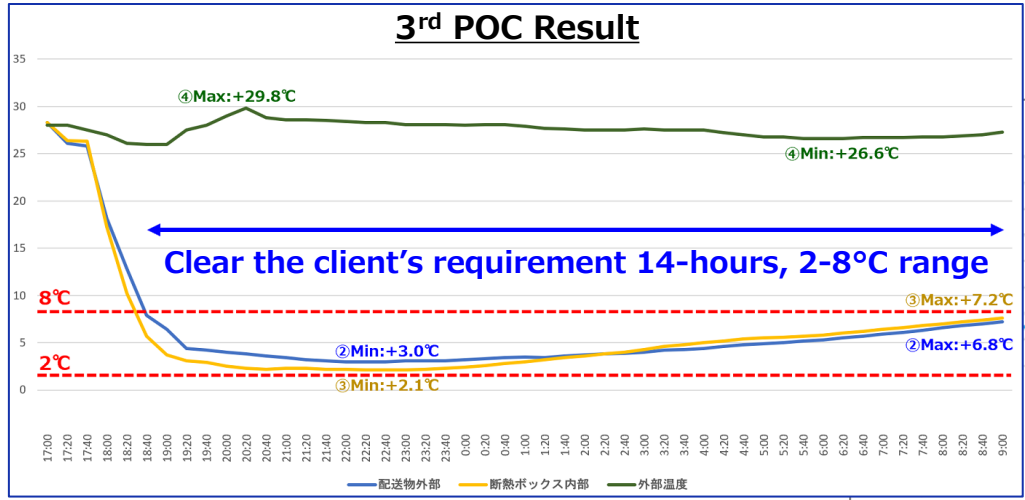
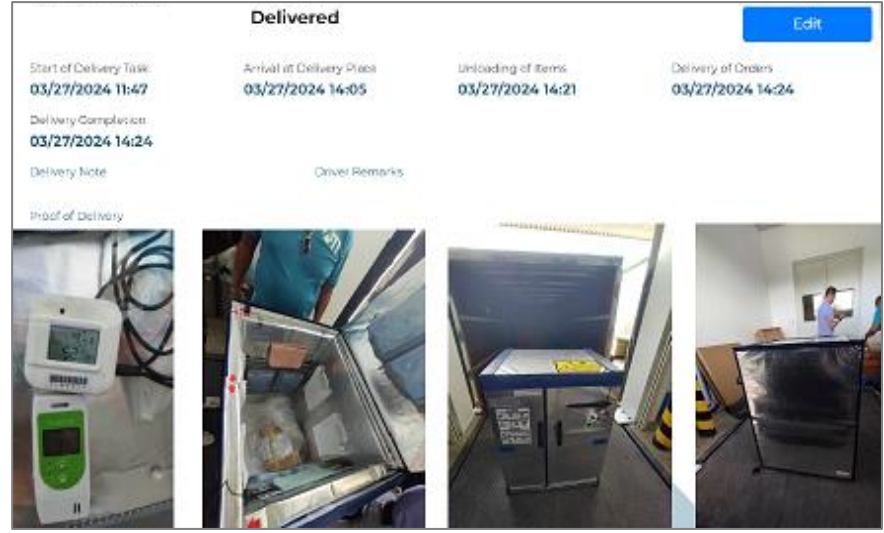
DNP Insulation Box with Delivery Management System

Cost Reduction

CO2 Reduction

Efficient Operation

Product for transport:
Medical Products
Temp: **2-8°C**



February 2022, DNP, Uniadex and GMS Established a Joint Venture trying to provide Logistics Mobility Service in the Philippines

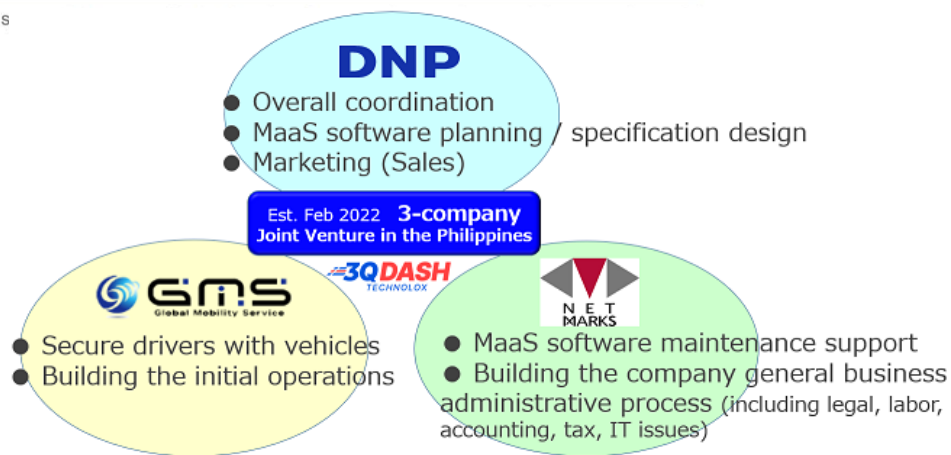


Dai Nippon Printing Co., Ltd.
Uniadex, Ltd.
Global Mobility Service Inc.

Tokyo, March 14, 2022, Dai Nippon Printing Co., Ltd. (DNP), Uniadex Ltd. (Uniadex) and Global Mobility Service Inc. (GMS) are pleased to announce the establishment of a Philippines-based logistics and delivery matching service joint venture (JV). The JV, to be known as 3Q DASH TECHNOLOX, INC., was initiated on February 4, 2022 and has been launched in anticipation of further expansion in logistics demand, and continuous growth going forward amid the Covid-19 pandemic.



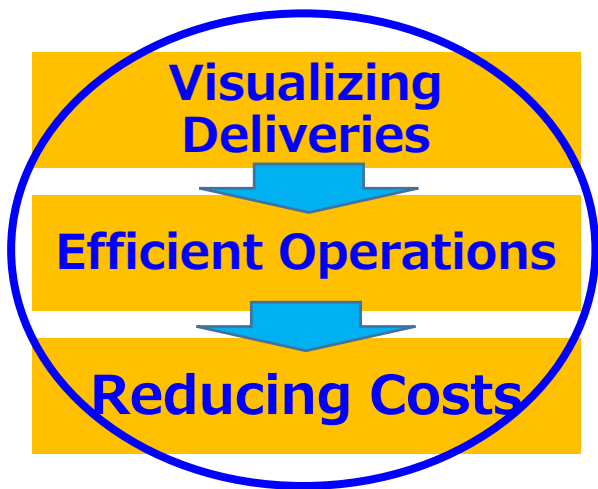
1: MCCS is a GMS-developed s



Products of 3Q Dash Technolox	
1	<p><u>Delivery management System</u></p> <p>[Benefits for users]</p> <ul style="list-style-type: none"> - Visualizing Deliveries - Efficient Operations - Reducing Costs
2	<p><u>Smart Cold Chain Solution</u></p> <p>[Benefits for users]</p> <ul style="list-style-type: none"> - Reducing Costs - Creating more opportunities to deliver temperature-controlled goods

1 Delivery Management System

Real-time visualization of delivery information using a smartphone app for drivers



Date of delivery* 07/31/2023 Customer Netmarks Phils.

Consignor* Mr. Aleksandra Transporter 3QX

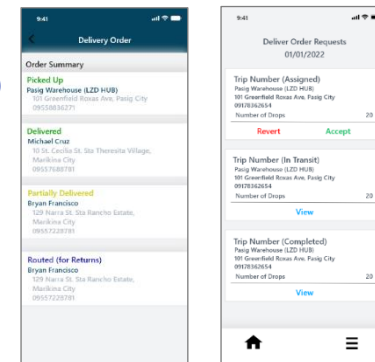
Pickup Location* Netmarks Philippines Pickup Address* 6th Floor Electra House Building Esteban, Legaspi Village, Makati

Pickup Mobile Number* 09***** Pickup Email Address* abc2@efg.com

Pickup Note Pickup by 8:00 am. Pickup Memo Wear proper uniform.

Fellowship	Delivered	Edit	
Start of Delivery Task 02/20/2023 13:11	Arrival at Delivery Place 02/20/2023 14:08	Unloading of Items 02/20/2023 14:08	Delivery of Orders 02/20/2023 14:09
Delivery Completion 02/20/2023 14:09	Driver Remarks		
Delivery Note Selfie on the signage	Proof of Delivery		

Smartphone Driver App



Administrative Pages



1) Assign Job Orders



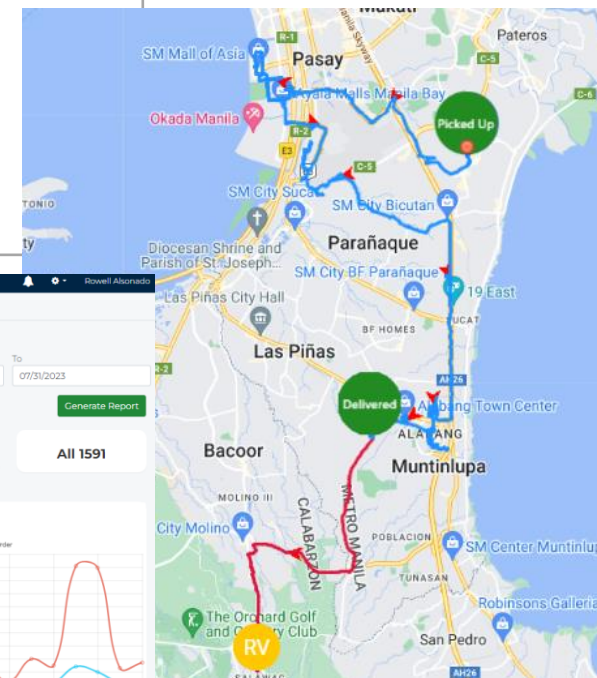
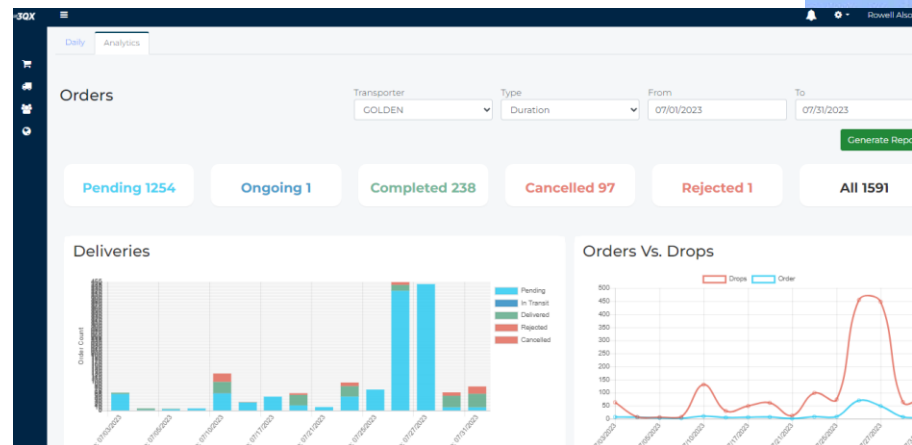
2) Plan More Efficient Routes



3) Track Delivery Status



4) Monitor Performance



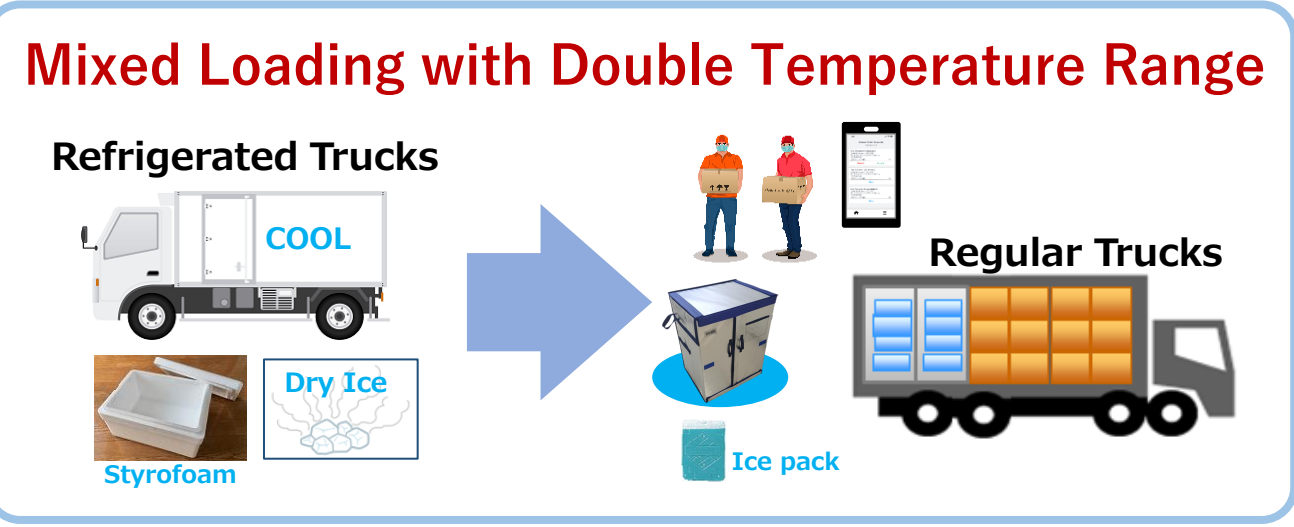
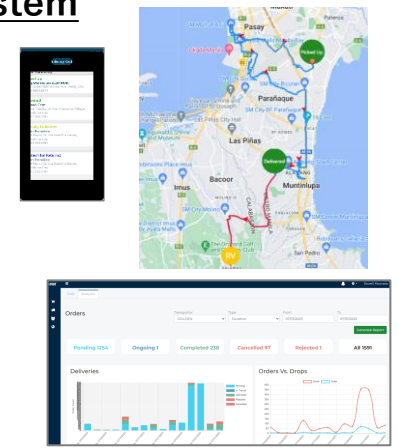
② Smart Cold Chain Solution

DNP

DNP Insulation Box



DNP Delivery Management System



Waste Reduction Reduce use of Disposable Styrofoam

Reduction of CO2 emissions Reduce use of Dry Ice
Reduce separate arrangements of Refrigerated and Regular Trucks



Cost Reduction Reduce disposable Styrofoam and Dry Ice to Reusable equipments
Reduce separate arrangements of Refrigerated and Regular Trucks
Reduce Operational Burden by digitalized delivery management



Reduction of Opportunity Loss Creating more opportunities to deliver temperature-controlled goods since securing Refrigerated Trucks during peak season is difficult in the Philippines in case you don't own enough to cover

DNP Technologies support the Smart Cold Chain Solution



The Lineup of DNP Insulation Boxes



Pallet size
940L



Food tray size
320L



Delivery size
58L



Light & High Insulation box
112L

Newly developed

Won the Grand Prize of the 28th 'Global Environment Award' in Japan in 2019.



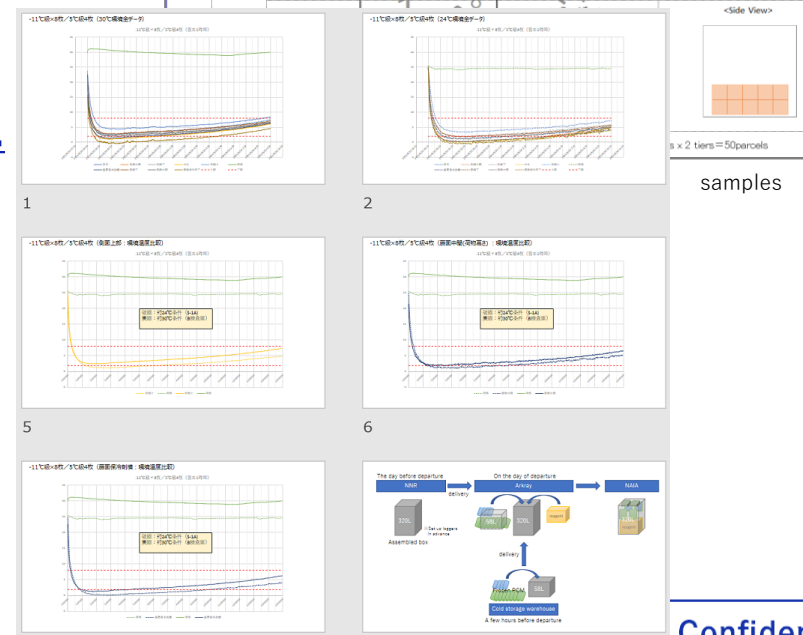
Phase Change Materials



samples

Client	xxxx Co., Ltd.		Date	DD/MM/YYYY
Project	Air transport for leafy vegetables		Name	Mr./Ms.
Data Input Sheet for Thermal Simulation				
NO	Items	Detail	Answers	
1	Type	Which type? (Pallet / Hand Truck / Roll-box / Roll-box (small))	Pallet Type	
	Frequency of Open/Close (= DSIB)	How often & how long does the door open/close during transport?	open for 5 minutes every hour	
	Initial temperature of DSIB	Temperature where it is stored before shipping	25°C	
NO	Items	Detail	Answers	
	Initial Temperature	Temperature while loaded in MFT container	5 °C	
	Packing List	Do you have a packing list?	Yes or No	
	Packing List attached	No need to fill out below if you have an attached file	Attached Yes or No	
	Category	Please attach catalogue, product description, SDS etc., if any (e.g., which type of glass bottle containers, etc.)	Leafy Vegetables	
	Total Dimension	Total dimension after loaded in DSIB container	W 600 mm x D 600 mm x H 320 mm	

DNP Original Temperature Simulation Software



Confidential

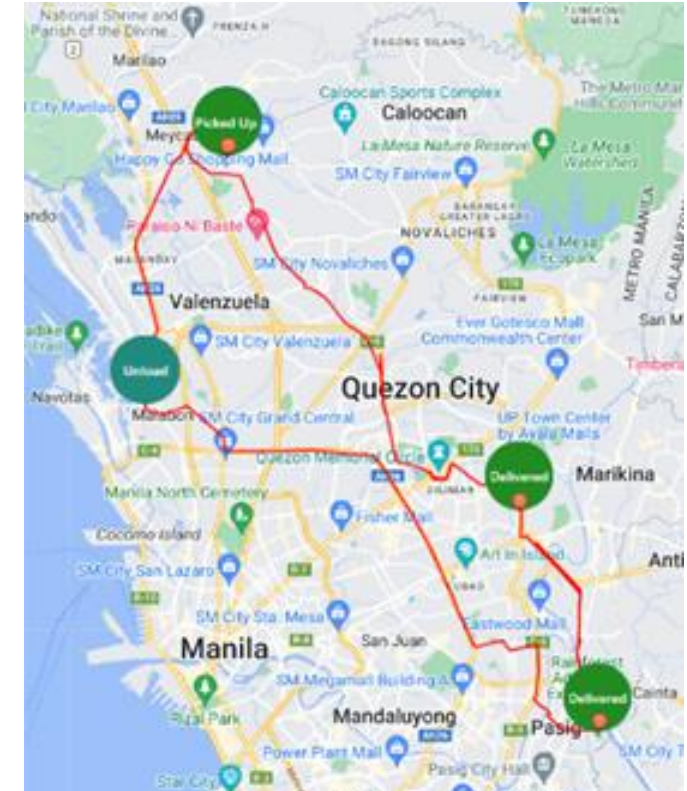
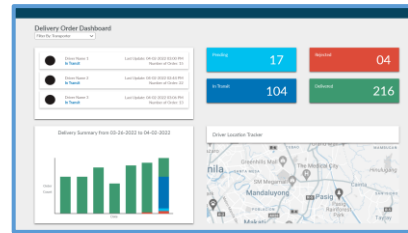
February 2023, conducted experimental project for last-mile logistics using DNP Multifunctional Insulation Boxes



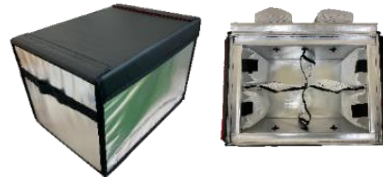
Utilized 3 Solutions



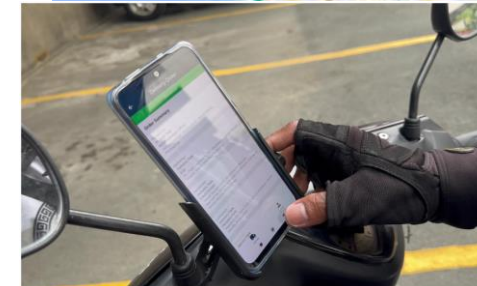
DNP Delivery Management System



DNP Insulation Boxes



Tricycle Driver Network supported by our Partners



Transportation of Milk Beverage in Malaysia



Pallet Size(1000L)

Product for transport:
Milk beverage
2-8°C



1,000L



Size for T11 Pallet

Compactly
Foldable

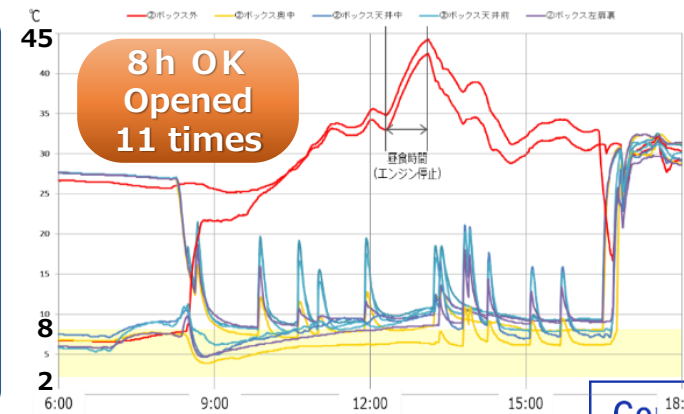
User Friendly
Top & Front Loading



1st Car ↑
2nd Car →



Ice
Pac
ks
18
kg



Test Transportation of Leafy Vegetables in Japan

Pallet Light Size

Product for transport:
Sunny lettuce
5-10°C



940L



Size for T11 Pallet

User Friendly
Top & Front Loading

Large-capacity cold
storage box 940L

Compact
and folds in half

Plant Factory



Put products in the box



24 hours

Food processing company's
Distribution Center



Delivery



Ice
Pa
cks
8
kg

● No change in condition before and after transportation Keep the quality at the time of packing!

● Can be folded and stored for efficient use of space

Kept the item temp 5-10°C for 24 hours
(Temp inside the cargo was 19-23.7°C)

Cold Chain Market in the Philippines and some ASEAN Countries

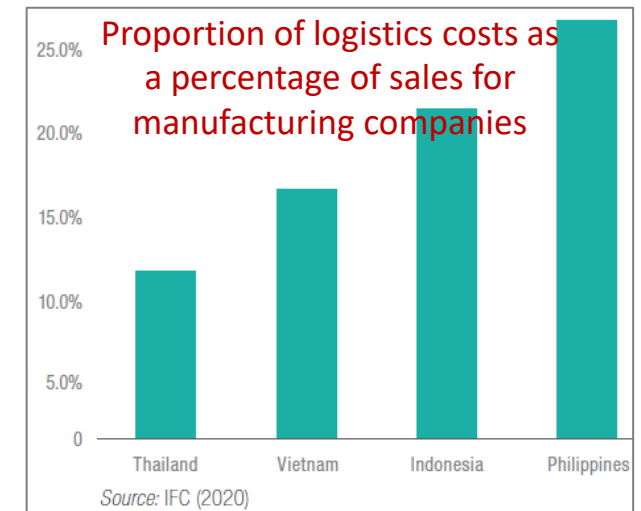
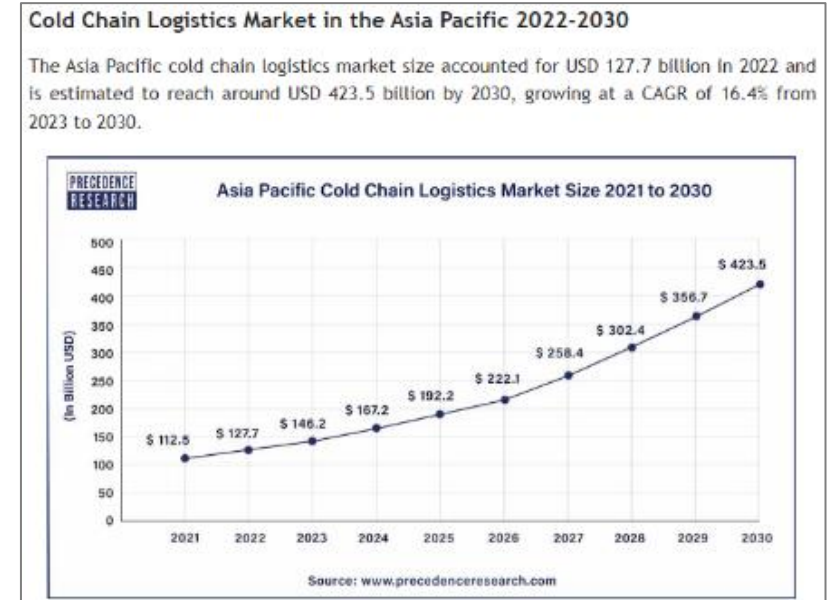


Source: NRI Report <https://www.mlit.go.jp/seisakutokatsu/freight/content/001572532.pdf>

Based on data provided by several sources, compared to France which has a similar number of urban residents, the Philippines has less than 10% of the refrigerated vehicles needed to serve its urban population.

	# of urban residents	# of refrigerated vehicles
France (2014)	55,000,000	140,000
Philippines (2019)	54,000,000	10,000

Source: CCI HUB Philippines Report https://cci-hub.org/wp-content/uploads/2020/09/Evaluating-the-Philippines-Food-Cold-Chain-Energy-Efficiency-and-Environmental-Impact_Online.pdf



Source: The World Bank Report <https://documents1.worldbank.org/curated/en/796871601650398190/pdf/Philippines-Digital-Economy-Report-2020-A-Better-Normal-Under-COVID-19-Digitalizing-the-Philippine-Economy-Now.pdf>

未来のあたりまえをつくる。

DNP