

Repeated failure of humanitarian logistics for recent disasters in Japan

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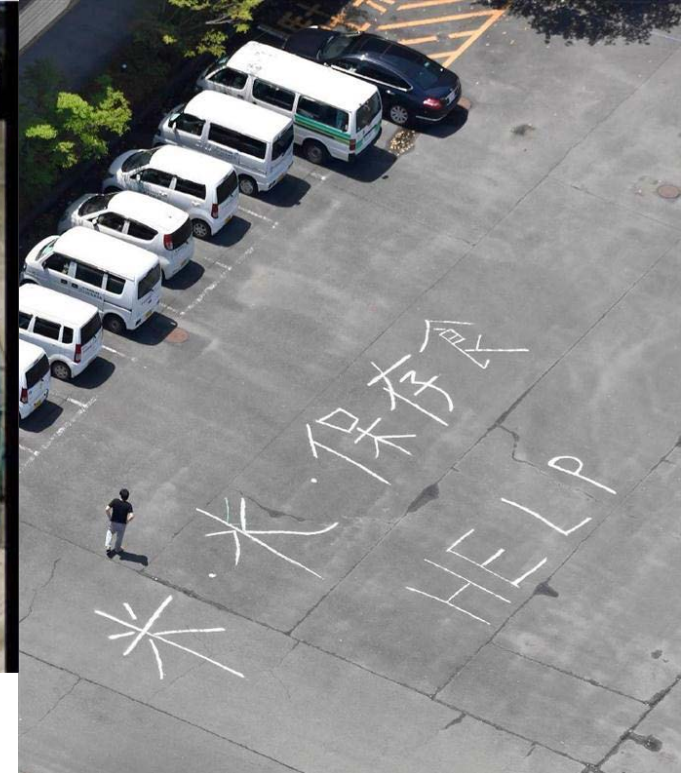


Message from the refugee from Kumamoto Earthquake (April, 2016)



Characters made by chairs on the playground
April 17.

"SOS! Paper, Bread, Water needed"
Kokufu High School in Downtown Kumamoto
City (Kyodo.NP)



Characters written on parking
of a elderly care facility in
Mifune Kumamoto. April 17.
"Rice, Water, Preserve food,
HELP" (Kyodo.NP)

Foods were not enough to reach all affected people.

"Shortage" were reported through several Social Network Service (SNS), e.g. facebook, LINE,

- Was there no water, foods in the affected area?
- To Increase the supply from outside is meaningful in order to improve the situation?

Kumamoto Earthquake (April 2016)



Plenty of goods arrived in front of Kumamoto Prefecture Office
(April 19)

Joso-city, Ibaraki

Kinugawa Rv. flood (Sep.2015)



Mitsukaido Gymnasium as a local distribution depot of supplies

Tokyo Shinbun Web News 2015.9.28

Hiroshima Earth Slide (2014.8.20)



安佐南・安佐北区に特化し予報

救援物資を整理する梅林小の
避難所のスタッフ
(撮影・坂田一浩)



避難場所には、大量の物資が・・・。

Report by a School Principal in Hiroshima

Really needed:

High Pressure Cleaner, Sand bag kit

In reality.....

- In the GEJE and Tsunami (2011), relief goods delivery system faced to difficulties such as, fuel shortage, stoppage of telecommunication and failed to provide sufficient goods to the affected people.
- In more recent disasters, Hiroshima earth slide (2014), Kinugawa flood(2015) and Kumamoto Earthquake (2016), relief goods delivery also failed even though telecommunication and transportation did not stopped.
- It resulted in inflations of stocks in depots and delay of delivery.
- We can learn several measures to avoid such confusions and delays in future disaster.

Repeated Problem in Humanitarian Logistics in Recent Disasters

Plenty of Goods were arrived into the affected area.
But those goods cannot be delivered well to each place.

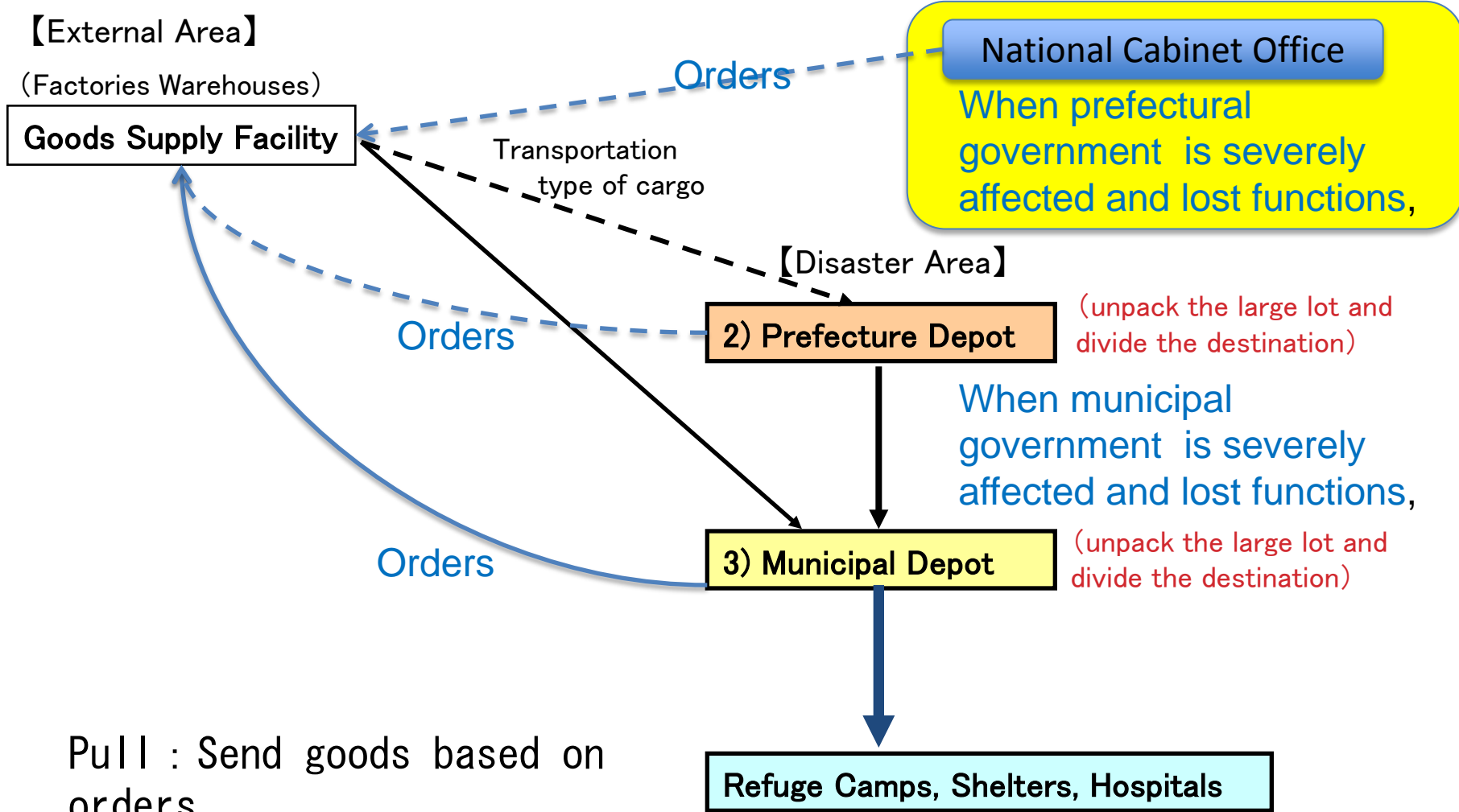
“The last One Mile Problem”

- Lack of manpower at distribution center

- Lack of Information

Good-will Sending from outside without orders specially expanded the confusion

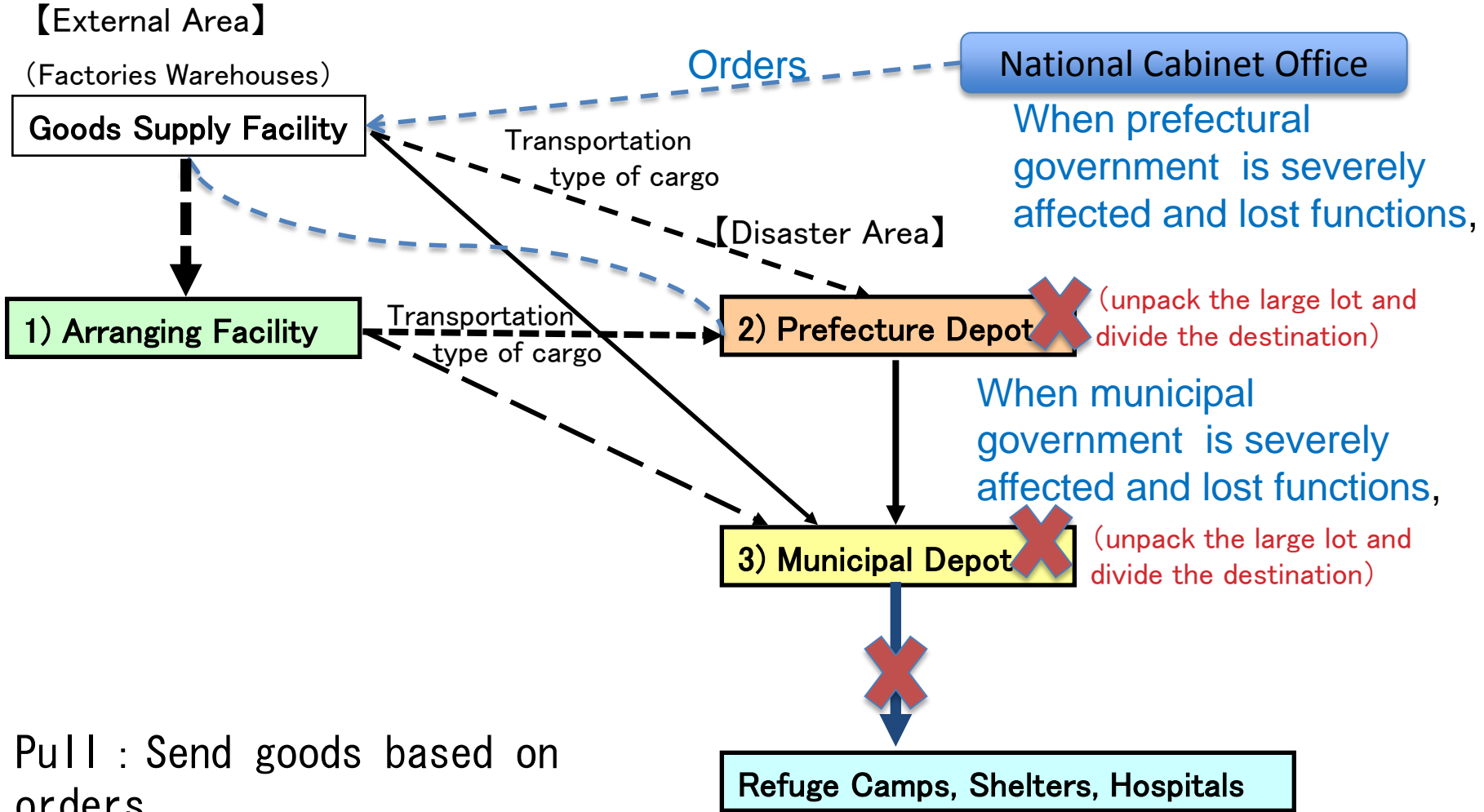
Logistics Flow until 2011 and after



FINDINGS IN 2011 Earthquake

- The **damages** of the earthquake and tsunami **were enormous**. More than 470,000 people had to leave their home and evacuate to shelters at more than 2,400 places.
- **Relief goods delivery was** planned to be executed **through two level depot**; Prefectural Depot and Municipal Depot.
- Especially in the first 2 weeks, **fuel shortage made it very difficult, deliveries** more downstream than Prefectural Depots.
- **Stoppage of telecommunication** expanded mismatches between real needs and supplies.

Logistics Flow at 2011 and after



REPEATED PROBLEM IN LOCAL AREA (Transportation)

【Roads in disaster area】

(★ineffective transportation)

Road Infrastructure Damages

detours, congestions

Shortage of Vehicles, drivers

Shortage of fuel for local delivery



© Kobe City

Repeated Problem at Local Depot

- Local government officials in the economic or industrial support branch of local government did not have enough knowledge or experience of the logistic management.
- They simply try to store the arrived goods in public building, and the space was filled up soon.
- Building specifications, such as floor strength, wide openings, continual access from outside were poor and became critical points in depot management.



Ill-organized inventory in a firstly assigned depot
(Iwaki Civic Hall on March 23)

Improvement of Management of Local Depots

- Good transportation access via express way and large handling and storage space under a roof are important (especially for the first level Prefectural depot).
- Privately owned warehouses are ideal if not damaged or preoccupied.
- Space below viewing stands, such as athletic field, horse race field, indoor gymnastic arena was convenient.



Well-organized inventory in a municipal depot with help of cargo-handling equipment and professional support (Taira Bicycle Race Track at Iwaki City on April 6)

REPEATED PROBLEM IN LOCAL DEPOTS

【Depot in disaster area】 (★ineffective Handling)

Handling by non-professional

- ① No carrying instruments
- ② No space for transport
- ③ Naïve Place allocations
- ④ Unclear signage



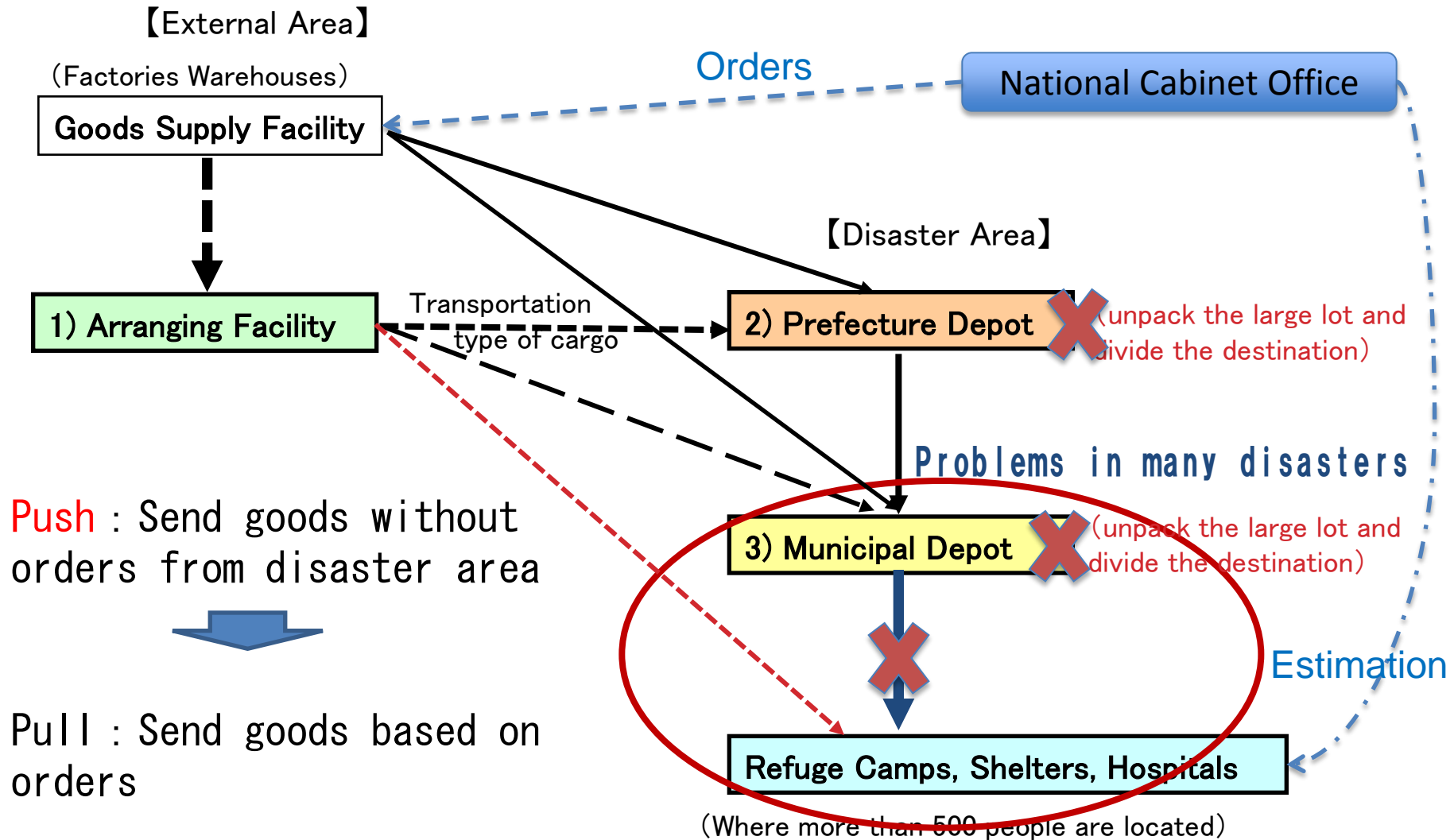
Handling by Professional transporters

- ① Rolling boxes
- ② Wide space and aisles
- ③ Frequency based space allocation
- ④ Signs and plates



(By Prof. Kuwahara, Tohoku University)

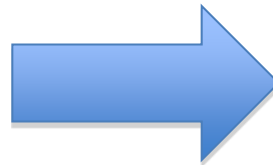
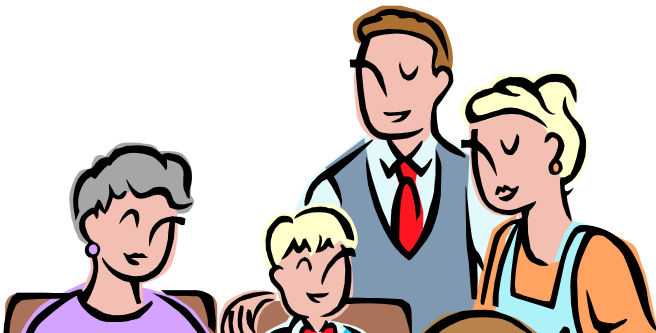
Logistic Flow in Kumamoto (2016)



They could not grasp the undesignated refuge.

Push logistics plan

- In advance, it is helpful to build a database such as a predicted number of victims, number of the elderly people and other socio-economic features.
- Based on those prediction, we should make stockpile of emergent basic living goods package of water, food and household goods. (such as tableware, wrap, tissue, towel, toothbrush, mask and blankets)



INEFFICIENCY OF PUSH LOGISTICS

- Local needs can easily change, both quantitatively and qualitatively
 - We should permit MIS-MATCHs.
 - We need not think that we should perfectly manage.
- Give priority on speed, not on equality
 - Free takeout location is possible idea!

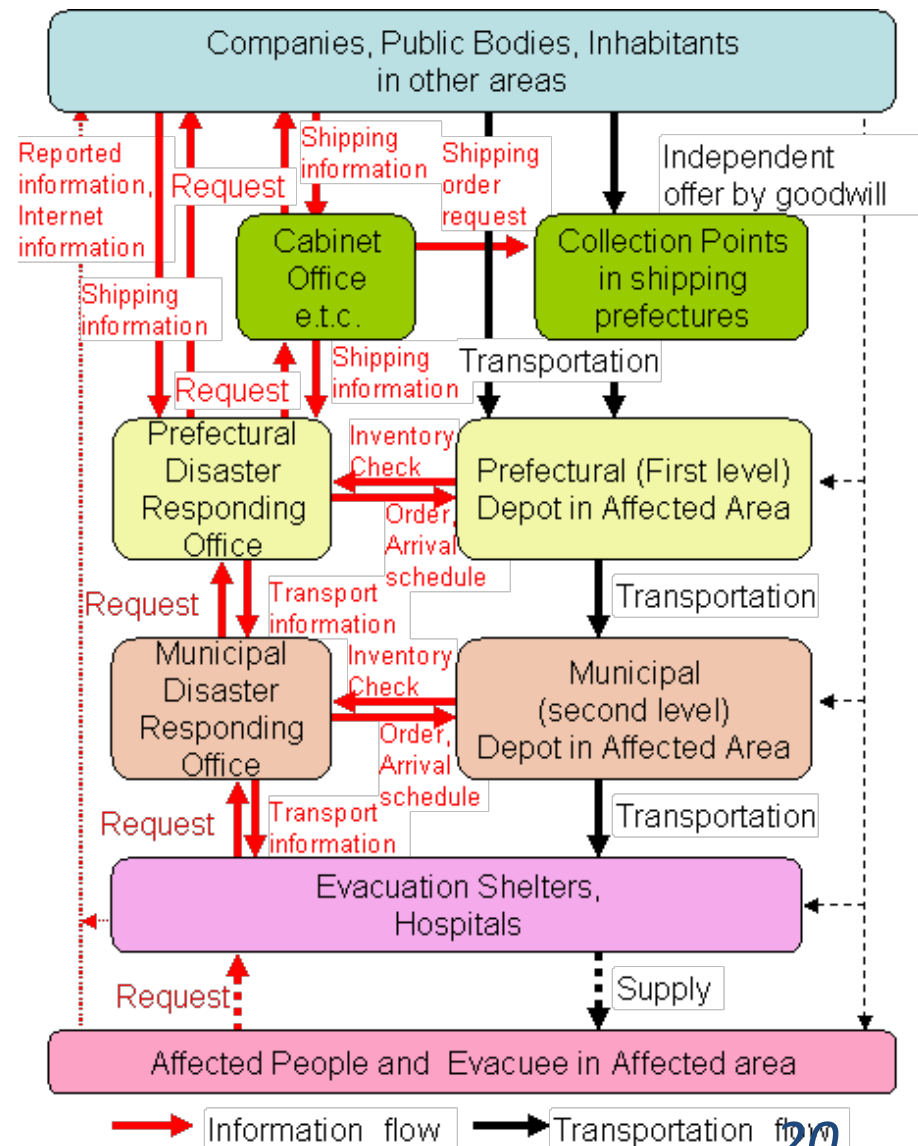
FINDINGS in REPEATED FAILURE

- Manpower shortage and insufficient building specification of depots are main cause of inflation of stocks in depots.
- Professional aids logistics specialists were effective to solve the confusion in depots.
- Crucial reason of failure was in information flow, not in traffic flow.

Relief Goods Delivery System and Information flow

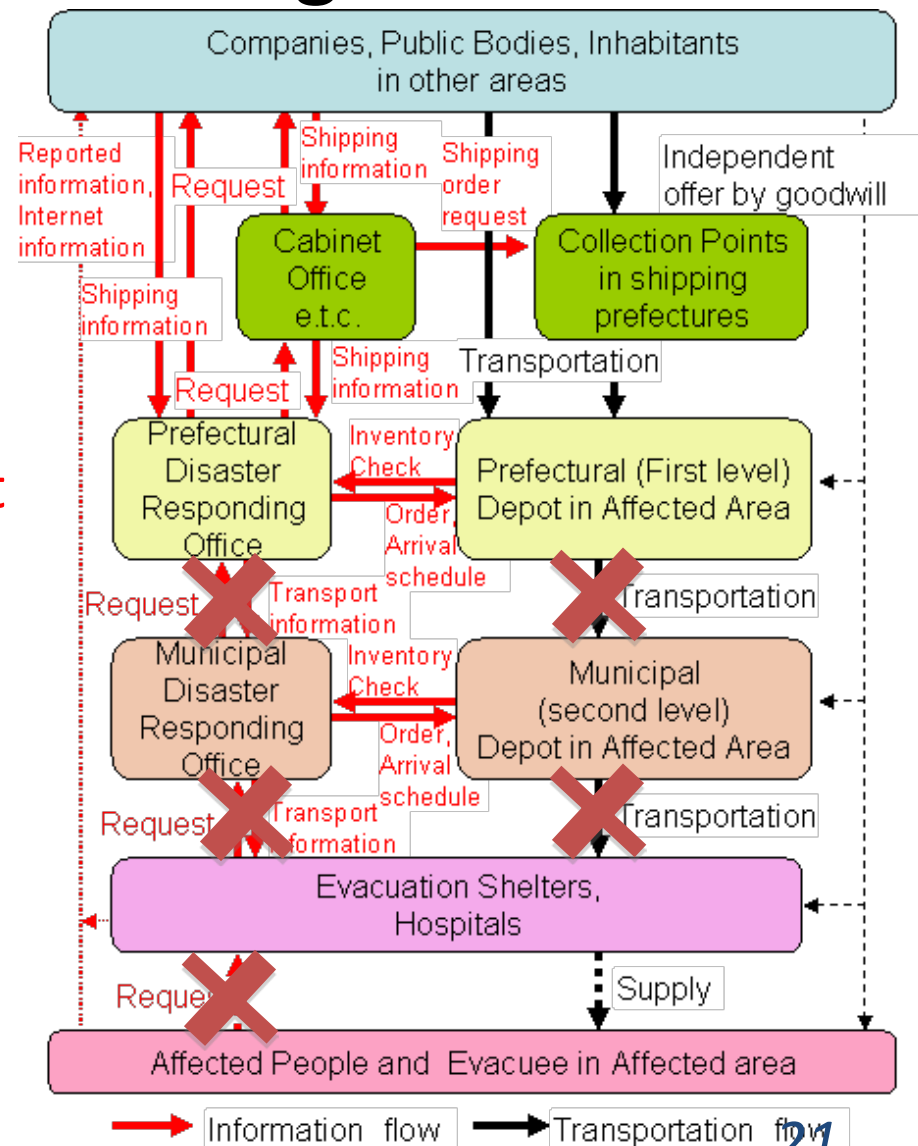
In Japan, **official delivery** of relief goods had been under the control of **Prefectural Governor**, before 2011. He will respond to requests from municipalities. (request-based pull logistics)

Relief goods delivery was planned to be executed through **two level depot**; Prefectural Depot and Municipal Depot.



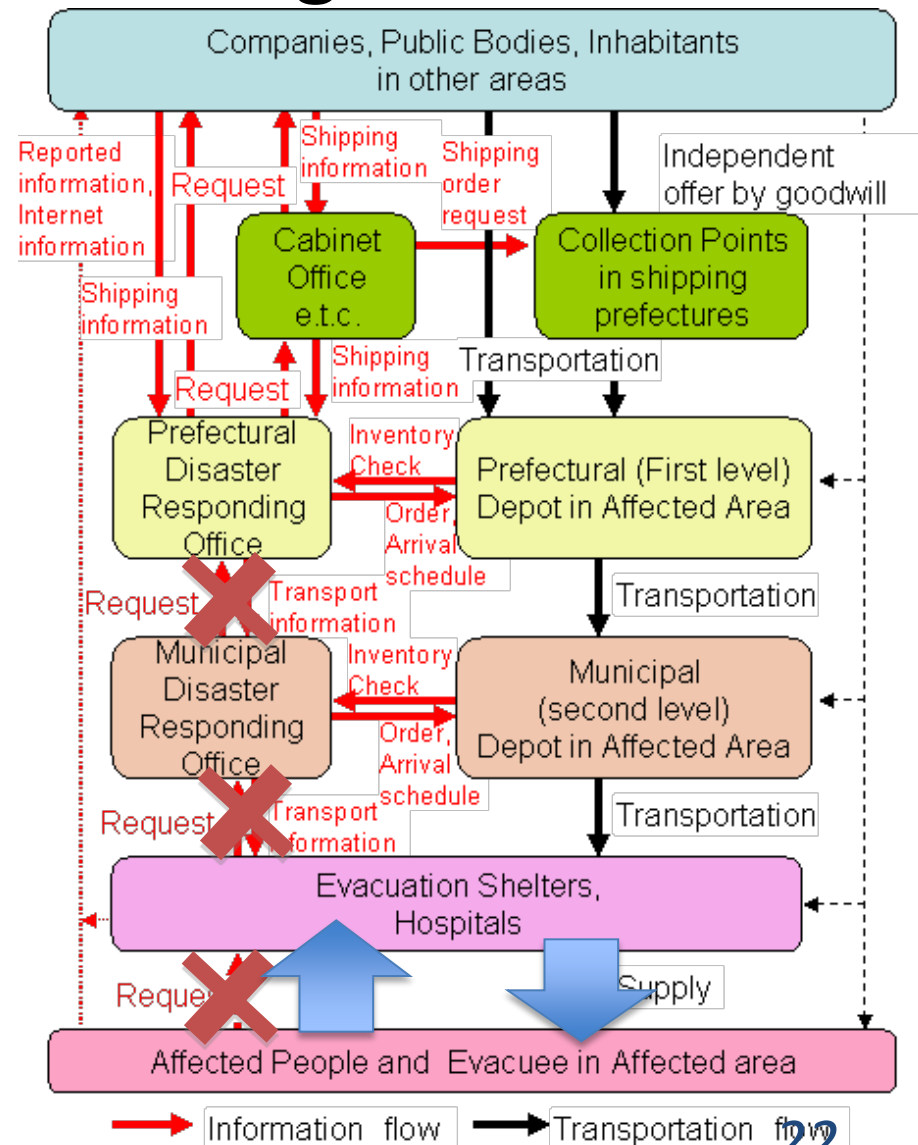
Difficulties in Transportation and Information Exchanges

- In the first several weeks, **local (truck) transportation** companies without their own fuel storage, were severely **suffered with fuel shortage**.
- **Information exchanges were not possible** due to the local fuel shortage, electric power blackout and breakdown of telecommunication measures.
- **Municipal government officials could not capture local needs** in the affected area.



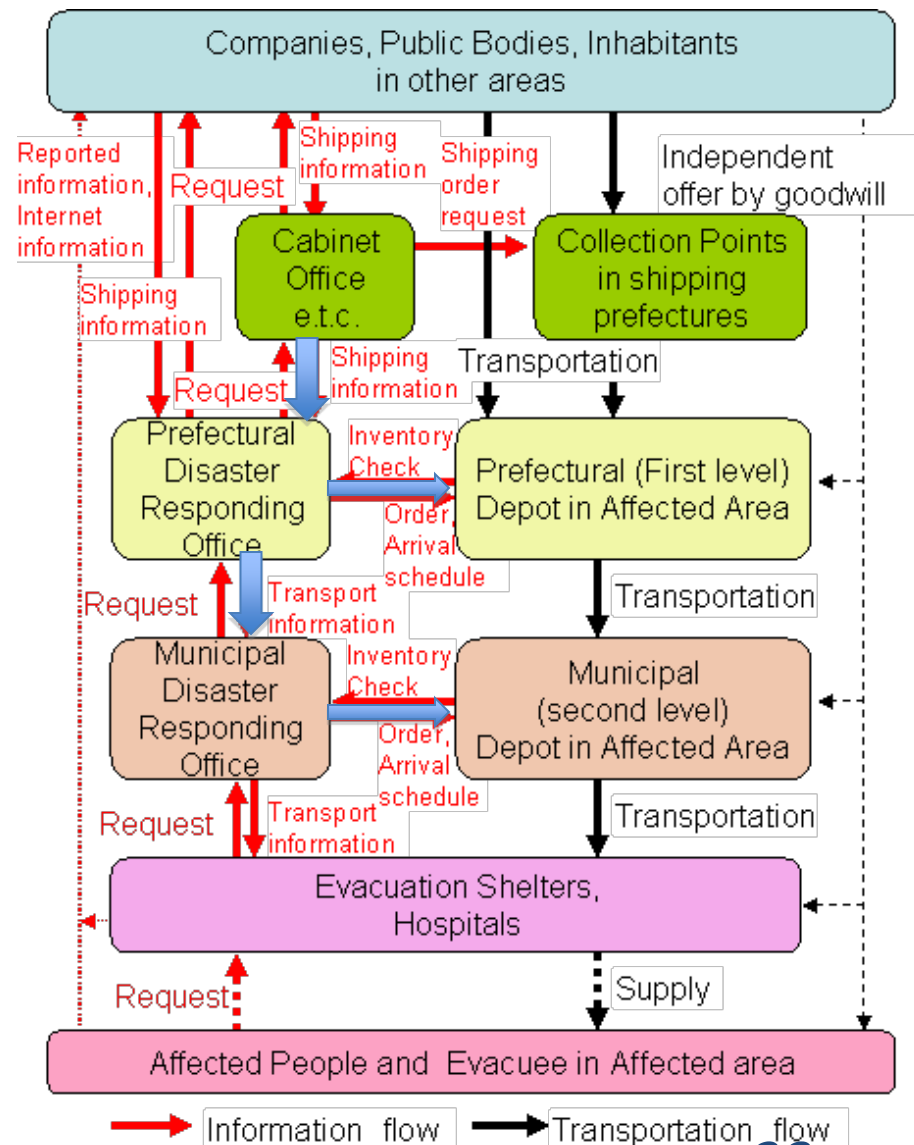
Difficulties in Transportation and Information Exchanges

- **Municipal government officials could not capture local needs** in the affected area, even the existence of undesignated refuge.
- **Upstream Information** from the bottom is **strongly important**
- **Local volunteers** work as well as volunteers from outside can strengthen this information gathering.
- Local people can take the last mile transportation, also.



Information from upstream

- For a smooth operation of distribution depots, it is necessary to get information about in what timing, what goods and how much being brought in, in advance.
- In the normal time logistics, the administrator obtain such information from information systems such as POS systems, and arrange personnel and space necessary on the basis of them.



Information from upstream

- Good-will sending (voluntary donation) goods usually lacks "upstream information"
- It may increase the confusion of the local depots.
 - Individual based donation should not be done in goods but in money.
- Large lot size donation from industrial firm is still welcome with corresponding information.

LESSONS

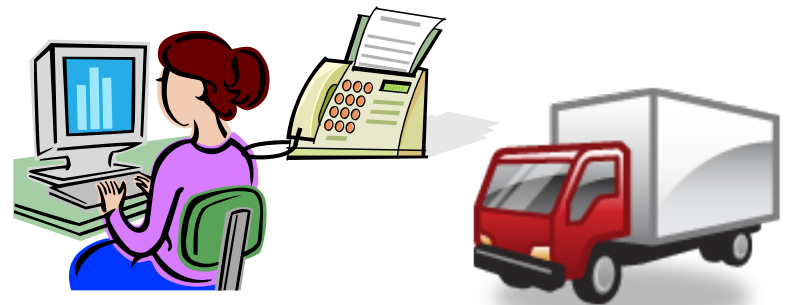
- Appropriate settings of depots, with enough support of logistics professionals and cargo handling equipment.
- Upstream Arrival Information at each depot is crucial for planning storage location planning and other managements.
- Prior quantitative assessment of emergently required goods based on regional demographic statistics to cope with “Push Delivery” in the first several days.
- It is important to use local people for information acquisition and local last mile transportation.

RECOMMENDATIONS

- Public facilities, such as gymnasium, hall should be well designed with enough floor strength, wide openings, good accessibilities for cargo handling equipment, to cope with possible use as logistics depot.
- Prior negotiations between public government and logistics companies concerning on the condition and payments for emergent assistance of logistics professionals, machines and use of depot facilities.
- Predetermine the local governments partnership, which will make cooperation in case of large scale disasters.
- Predetermine the standard format of shipments and orders, including the unified units of goods.

Predetermined Inter-municipality Partnership

- Sufficient information transfer or analysis cannot be assumed within the affected region in case of large scale disaster.
- Municipalities located outside the disaster area should execute all information management for relief logistics on the basis of pre-determined pairing.



Basement of information sharing

- Among national and local government agencies, logistics operators, providers of goods, etc., **universal definition of items** and **corresponding unit** are needed to be defined and shared.
- **Standard order form, transportation request form, cargo transportation certification**, should be prepared.



Continuation of Ordinal Commercial Logistics



- Qualitative mismatch occurs in any system without individual orders.
 - Qualitative matching is done in ordinal days through customer's selections in shopping.
 - Last mile problem is also solved through individual trip of Shopping.
- In Kumamoto case, 0.2 mil. people evacuated in 0.8mil. residents. The other inhabitants relied on the ordinal commercial logistics.
- Continuity of ordinal commercial activities is strongly important.

Switch to the commercial business

- Commercial business can more efficiently correspond to the diversified and sophisticated needs of people.
- It is important to facilitate a return to the commercial based supply, from the distribution of relief supplies.
- Swift recovery of commercial logistics is the first priority.



Thank you for your attention!

Your questions and comments are welcome.