Relief Goods Delivery Facilities, learned from the Great East Japan Earthquake

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ABSTRACT: The Japanese Government had planned the relief goods delivery to evacuation shelters and hospitals through two levels of delivery depots: Municipal and Prefectural by the time of the 2011 Great East Japan Earthquake. But in the Disaster, this delivery system faced to several difficulties, fuel shortage, stoppage of telecommunication, supply and demand mismatches, resulted in inflations of stocks in depots and delay of delivery to the affected people. This presentation reports the difficulties and proposes improvement of delivery system especially focused on depots

1 Relief Goods Delivery in 2011 Disaster

1.1 *Relief Goods Delivery System in Japan*

In Japan, legal delivery of relief goods is under the control of Prefectural Governor, responding to requests from municipalities. Relief goods delivery was planned to be executed through two level depot; Prefectural Depot and Municipal Depot, as shown by Fig. 1. In 2011 Disaster, besides the ordinal procedure, National Government (the Cabinet Office) was added in order to support nation-wide good distribution, as shown by green color in Fig.1. Such National Government based goods distribution resulted in 26 million meals, 8 million bottles of beverages, 410 thousands blankets through 1900 tracks, 150 aircrafts, 5 helicopters, as well as 8 ships, by April 20.

1.2 *Difficulties in Transport System in 2011 Disaster*

It was not easy to deliver several kinds of goods, such as food, drinking water, clothes, bedding, to people of these many including the disaster victim who remains in the house and refugee in over 2,000 shelters, especially in the first several weeks, when fuel supply was too small for local transportation companies without their own fuel storage (in-tank) like larger companies providing trunk line transportation service. By the end of June, 1,800, 1,400 and 2,400 tracks were specially assigned for the transportation from Prefectural depot to municipal depots in Iwate, Miyagi and Fukushima, respectively. Local fuel shortages combined to the blackout of electric power and breakdown of telecommunication measures make all local government people difficult to capture local needs and actual situation of the affected people in the area.

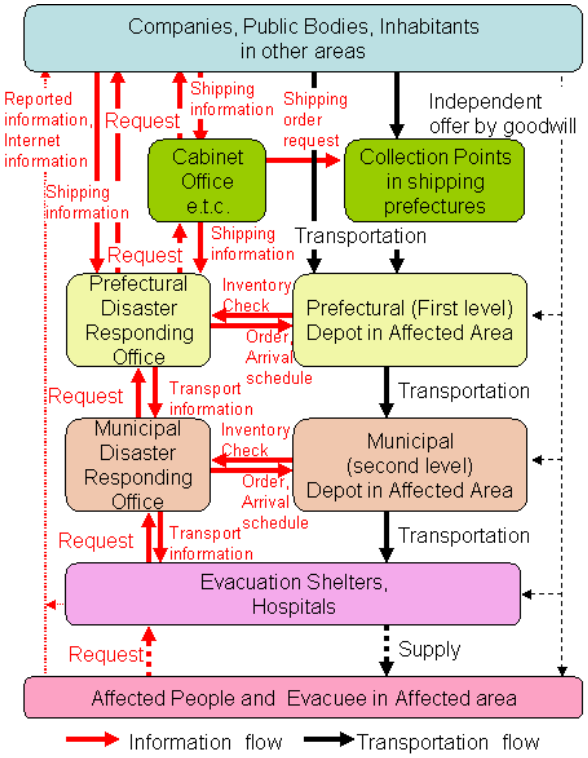

Figure 1 Information and transportation flows in the legal relief goods delivery system

1.3 *Difficulties in Information Exchanges*

Facilities and staff of the municipality affected by the disaster resulted to a significant obstacle to business operations, such as information aggregation. In addition, the disruption of communication means such as a telephone line, disaster situation in the affected areas, and evacuation of where evacuees were not available.

By this reason, very limited information was available regarding the location of the shelter, which is the addressee of the goods as well as information about

the type and amount of aid necessary for the procurement of goods. In addition, by the disruption of telephone line communication means and confusion, possible arrival schedule of the transported goods was enough to be shared between the parties, for several weeks.

1.4 *Problems at Distribution Depots*

Although many people consider the critical point was transportation stoppage and capacity reduction in the area, it was not the main cause of the problem. In the affected area, jobs for local government workers exploded, while not small numbers of workers were lost by the disaster. According to the predetermined disaster countermeasure manuals, management of the delivery system is planned to be controlled by economic or industrial support branch of local government, but the worker in the section did not have enough knowledge or experience of the logistics management. They simply try to store the arrived good in public building without notion of logistical management, but the space was filled up by the goods shortly.

Building specification of depots was also critical point in depot management. 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 would be ideal if not damaged and preoccupying business cargo can be soon cleaned up. Besides them, the space below viewing stands, such as athletic field, horse race field, as well as indoor gymnastic arena were suitable, because rain can be prevented and also a car can advance as it is. Table 1 shows the facilities actually used as prefectural and municipal depots in the three affected Prefectures.

In Miyagi Prefecture, because large scale warehouses were located near Sendai Seaport and strongly damaged by tsunami. Neither Yume Messe Miyagi, the convention complex at Sendai Seaport, affected by tsunami, nor Miyagi Prefectural Sports Park Grandi-a21 Gymnasium used as a mortuary, could be used as a distribution center.

Table 1. Facilities used as distribution depots in the affected three Prefectures

Prefecture		Facilities used as Depot	Date
Iwate	Pref.	Iwate Industry Culture & Convention Center APIO (Takizawa Village)	3.14-
Iwate	Pref.	Snow Shelter in Hanamaki Airport	
Iwate	Inter-mediate	4 Facilities in Tohno (including) Gymnagium	
Iwate	Munic.	22 locations	
Miyagi	Pref.	25 warehouses of 21 private companies	3.17-
Miyagi	Munic.	26 locations	
Fukushima	Pref.	9 Warehouses of 8 private companies	3.16-
Fukushima	Munic.	26 locations	

2 Lessons for Next Coming Disasters

2.1 *Need of Logistics Specialists' Aid*

In disasters like this a variety of business can be generated for the local government staff. For the integrated management of the distribution depots, logistics business professionals should take advantage of the ability of the private sector as much as possible. Not a few local public bodies hesitated to decide the commission of relief goods logistics management works to any private companies, because they were not sure whether Disaster Assistance law would be applied to those commission, nor origin of the funding for the work. To avoid this problem, putting agreements in advance, including the cost allocation is desirable.

During the usual period, most of the cargo are what had been ordered, then the information for the contents of the goods, quantity, time of arrival is known. But it is almost impossible even for logistics experts, to manage the delivery depot smoothly without the basic information from the upstream like this.

2.2 *Preparation of Distribution Depot Facilities*

Considering the requirements for distribution depots, prior negotiations between public government and logistics companies must be done concerning on the condition and payments for emergent assistance of logistics professionals, machines and use of depot facilities.

Adding to them, when they plan to build new public facilities, such as gymnasium and hall, they must consider building specifications in order to easily use them for relief goods distribution depots. Floor strength, wide openings, good accessibilities for cargo handling equipments, as well as geographical convenience of the facility must be assessed.

Prior quantitative assessment of emergently required goods based on regional demographic statistics to cope with "Push Delivery" in the first several days without enough information is also important taskof local governments.

References

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