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HUMANITARIAN LOGISTICS IN ASIA

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Humanitarian Logistics In Asia

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EXECUTIVE SUMMARY

In the past two decades, we have witnessed an increasing number of natural disasters and increasing number of people affected by natural disasters in Asia [1]. The keep rising casualties and growing international attention on this region piles up substantial pressure on all parties in humanitarian supply chain in Asia. HROs, with their expertise on humanitarian works, face unprecedented challenges as well as opportunities to fulfill their primary duty on relief operations and help people in need. There is an urgent call of action on HROs to improve their performance in this region.

In Asia, HROs often have to face lack of government support and basic infrastructure. There is also coordination and communication problem both between HROs and other parities such as the local government and the private sector as well as among HROs. This paper provides an overview of the humanitarian logistics structure in Asia and pinpoints the main challenges involved to draw attention of the public and to stimulate discussion on the issues in humanitarian logistics in Asia.

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INTRODUCTION

Background

With the increase in the number and impact of recent disasters, the shortcomings in planning for disasters have become more apparent and the critical role of humanitarian logistics in effective disaster relief delivery has been recognized [2]. Asia, with its distinctive geographical, cultural and political circumstances, faces a unique set of challenges in humanitarian logistics, such as lack of governmental support, equipment and expertise. The government, HROs, and the private sector have indispensable responsibility to help the community after the disaster happens. As human lives are involved, it is crucial to ensure all stakeholders function effectively and cooperatively.

Objectives

This white paper seeks to provide an overview of the humanitarian logistics framework and operations in Asia and to identify the challenges involved. Through this, readers will have a better understanding of the roles of stakeholders in humanitarian logistics in Asia.

Paper Structure

The rest of the paper is organized as follows. In the next section, the definition of humanitarian logistics and the operations involved is discussed. After that, we focus on Asia. We take a look at the players involved in humanitarian relief operations in the region and their roles. Finally, we discuss the challenges faced in humanitarian logistics in Asia and look forward the questions remaining to be solved.

HUMANITARIAN LOGISTICS OPERATIONS

Humanitarian logistics is a division of logistics which focuses on organizing the warehousing and delivery of supplies during natural disasters to the affected area and people. The supply chain of the relief supplies in humanitarian logistics differs from commercial supply chains in the following ways:

- A huge surge of demand with a short notice
- Multi-agencies involved and different supplies required
- Human lives involved

Humanitarian logistics has evolved into a complex system to serve as "a bridge between preparedness and response, procurement and distribution, and between headquarters and the field" [3]. Thomas and Mizushima [4] come out with a good definition of the humanitarian logistics to include every component of humanitarian logistics.

"Definition (Humanitarian Logistics): Humanitarian logistics is the process of planning, implementing and controlling the efficient, cost-effective flow and storage of goods, materials and equipment as well as related information, from point of origin to point of consumption for the purpose of meeting the end beneficiaries' requirements" [4].

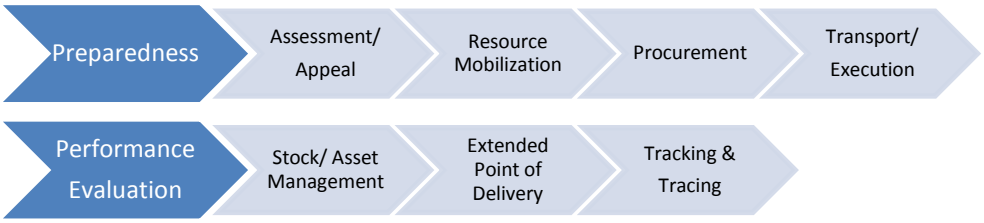


Figure 1: Supply Chain Activities During a Relief Operations. (Adapted from Thomas, [3])

Thomas also summarized the supply chain activities during a humanitarian logistics operation into a sequential list (Figure 1). However, it is easier and more intuitive to follow Alexander's work to categorize humanitarian logistics into a cycle with four phases, namely mitigation, preparation, response and recovery (Figure 2). Activities in the mitigation and preparation phases are for reducing the likelihood of a hazard and equipping people who may be impacted by a disaster or who may be able to help those impacted to minimize the financial and other losses, therefore reducing the consequences

of a natural disaster. These two phases are before a disaster happens. Immediately following a disaster is the response phase, which involves actions to reduce the impact of the disaster. Finally, reconstructing the infrastructure and re-establishing community is the recovery phase.

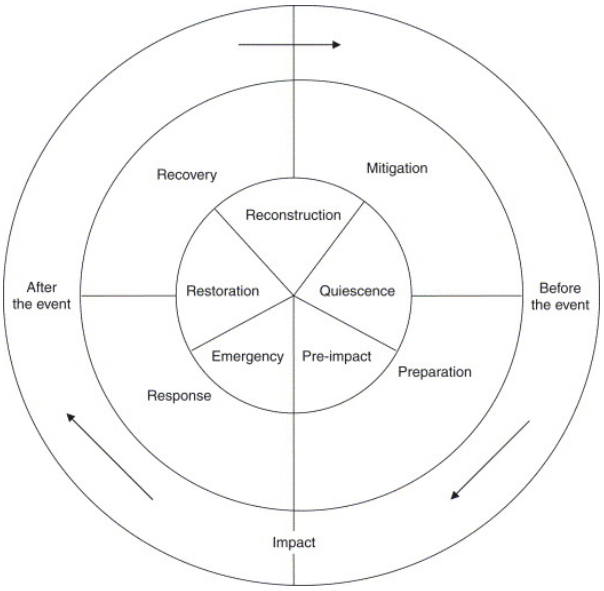


Figure 2: The Disaster Management Cycle. (Adapted from Alexander, [5])

One difference between the humanitarian supply chain and the commercial supply chain is the focus on the end recipient. In the humanitarian logistics, the end user rarely participates in the supply chain decision making, having little control over the supplies, unlike the end-customer in a commercial supply chain. In humanitarian logistics, the supply chain has to be flexible and adapt quickly to unpredictable events under heavy budget and resource constraints [6].

Mitigation and Preparation

Mitigation and preparation are essential in humanitarian logistics to alleviate risk and to minimize the impact of disasters. Given the uncertainty in the time, location and scale of disasters, pre-disaster preparation forms a large part. The mitigation and preparation part consist of three elements: assessment, planning, and education.

The assessment of the risk factors, vulnerability of the region, and the supply-demand gap is crucial for different parties to be motivated and get into preparation activities, such as building up infrastructure, policy making, capacity building and pre-positioning of

resources. Besides the assessment and planning, it is also important to train personnel and to educate communities to prepare for possible disasters.

Disaster Response

The disaster response phase starts immediately after the occurrence of the disaster and lasts up to three months. The relief operations consist of two phases. The first phase is to supply medicine, food and shelter to victims. The second phase is to provide housing and to establish sustainable food and water. All the relief operations are supported by logistics means. The activities executed during this phase are primary activities and have to be coordinated in a very short period of time.

Recovery

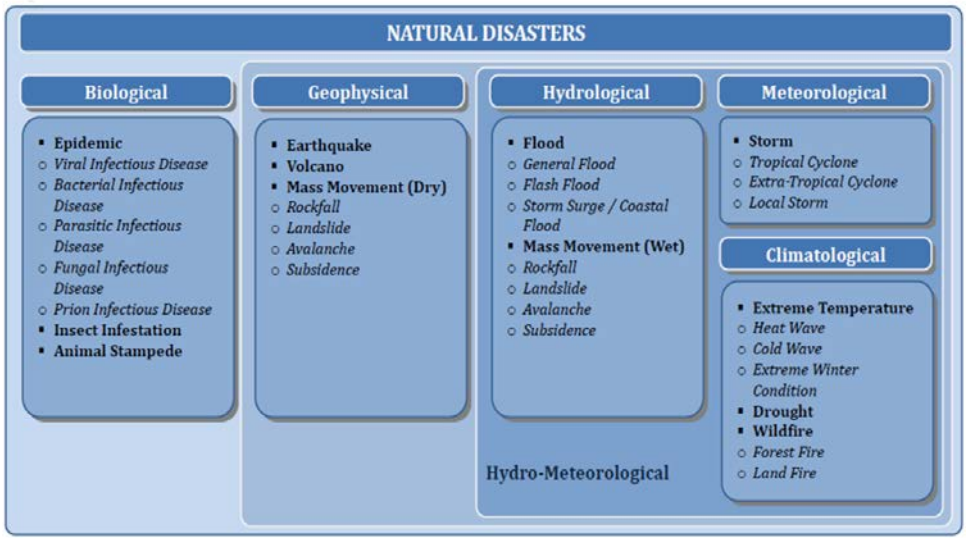
The recovery phase focuses on debris cleaning, infrastructure rebuilding and re-establishing communities [7]. The impact of the disaster will be measured and lessons learned. The short and long term plans have to be established to minimize the impact of another possible disaster.[8]

The main focus of this paper will be on preparation and disaster response as there are more logistics issues involved.

HUMANITARIAN LOGISTICS IN ASIA

Trend of Natural Disasters

Table 1: Classification of Natural Disasters



Source: Adopted from CRED [9].

Natural disasters are classified into five categories, as shown in Table 1 above. In the past decade, we have seen an increase in the number of natural disasters worldwide. Among them, 20.1% of natural disasters in the world happened in Asia from 2001 to 2011. Asia also accounts for 44.7% of deaths caused by natural disasters and suffered the most damage of USD 692.13 bn (Table 2). The Asian Tsunami in 2004, the Wenchuan earthquake in China in 2008, and the earthquake off the Pacific coast of Tohoku in Japan in 2011 are just some of the more recent natural disasters.

Table 2: Natural Disaster Occurrence and Impact (2001-2011)

	Africa	Americas	Asia	Europe	Oceania	Global
No. of natural disasters						
Climatological	101	133	121	172	12	539
Geophysical	30	75	238	21	22	386
Hydrological	484	432	896	250	61	2123
Meteorological	99	373	431	145	76	1124
Total	714	1013	1676	598	171	4172
No. of victims (millions)						
Climatological	143.89	14.88	675.43	2.70	0.00	836.90
Geophysical	0.80	10.21	79.14	0.12	0.70	90.96

Hydrological	23.24	40.04	1139.57	2.52	0.40	1206.77
Meteorological	3.62	28.18	732.90	1.10	0.41	429.52
Total	171.65	93.30	2290.36	7.44	1.51	2564.15
Damage (US$ bn)						
Climatological	0.40	30.38	37.29	32.30	4.85	105.23
Geophysical	6.90	47.50	385.90	5.90	24.90	471.10
Hydrological	3.81	43.32	168.50	56.59	12.40	284.62
Meteorological	0.81	448.82	100.34	40.40	8.10	598.57
Total	12.02	570.02	692.13	135.19	50.26	1459.62

Source: Adopted and developed from CRED [9].

From 2000 to 2011, Eastern Asia, which includes China, Japan, North Korea, South Korea, Mongolia and Taiwan, accounts for 26.3% of the total number of natural disasters and 18.4% of the total deaths recorded caused by natural disasters in Asia. South-East Asia, which includes ASEAN and Timor-Leste, accounts for 31.4% of the total number of natural disasters and 49.0% of the total deaths. South Asia, which includes Afghanistan, Bangladesh, Bhutan, India, Iran, Maldives, Nepal, Pakistan and Sri Lanka, accounts for 31.2% of the total number of natural disasters and 32.1% of the total deaths. From the distribution, these three regions are the most affected regions by natural disasters in Asia (Table 3).

Table 3: Natural Disaster Occurrence and Impacts 2000-2011 in Asia

	Central Asia	Eastern Asia	South-Eastern Asia	Southern Asia	Western Asia
No. of natural disasters	67	522	622	618	154
No. of deaths	562	131276	349067	228587	2793

Source: Data from EM_DAT [1].

Role of Stakeholders

The extant humanitarian logistics system in Asia as in any other parts of the world is a system involving three major players: governments, international relief agencies and the private sector.

Government

In Asia, governments are normally at the central position of humanitarian operations. They see it as their duty to provide services to their citizens. Most nations in this region have their own national disaster management systems created under clear political and legal mandate. Military forces are also involved and seen as the backbone of the national

system in many countries such as China [10]. In spite of the different political formations and institutional forms of their national disaster management systems in Asia, the national disaster management system has the strongest capacity and authority to mobilize resources. However, the national systems are confined within the national borders. The government sometimes refuses external help while its own system fails due to sovereign and territorial concerns. This has happened in Myanmar after Cyclone Nargis and in Indonesia after the Asian Tsunami [11].

We note the regional effort to establish coordination centers and expert panels throughout the region. The Asian Disaster Reduction Centre (ADRC), for example, is established in 1998 to improve disaster resilience of the member countries and to establish safe and sustainable communities. The Asian Disaster Preparedness Centre (ADPC) is another example, which is established in 2005 to help the creation of an early warning system for tsunamis and other natural disaster in the Indian Ocean and Southeast Asia. There are several other major coordination centers and forums and the existing system seems very complex and overlapping, which undermines their effectiveness.

International Relief Agencies

External help is often requested by local government when a major disaster strikes, especially in developing countries with their limited infrastructure and ability to handle large scale emergencies. Major international agencies involved in disaster relief include international non-profit organizations (NGOs), UN bodies and donor organizations. All those external agencies are defined as Humanitarian Relief Organizations (HRO) [12]. HROs perform their humanitarian duties following “The Standards of Human Aid Agreement” and various other international agreements [10]. Some leading HROs in Asia include the UN, WHO, IMF, World Bank, CARE, various international charitable organizations, NGOs like Mercy Relief, Save the Children, World Vision, and the Red Cross.

Most HROs have both regional offices in well connected cities like Singapore, Bangkok and Jakarta. Many also have local offices in some of the disaster-prone countries. This is crucial to win trust from the central government and build good collaborative relationship with the local government. Notwithstanding this, there is little or no joint planning, resource sharing and coordination among the HROs.

HROs normally obtain their funding from the public. For example, World Vision gets 70% of its funding from the public including foundations and only 30% come from government grants.

Private Sector

In recent years, there is greater involvement of the private sector in humanitarian logistics. Research carried out by the INSEAD Humanitarian Research Group shows that companies have been re-examining their options and considering humanitarian activities as corporate social responsibility [13]. There are three forms of corporate support for humanitarian activities, namely the donation of funds, volunteering and delegation and application of key expertise.

Donation of funds

Cash is still the most common and often the most appropriate and useful donation for the humanitarian relief effort. It keeps many HROs, especially Non-Governmental Organizations running since their funding largely comes from donations. HROs have responsibility to use the money wisely and effectively. From the corporate point of view, it is also more convenient as the cost is defined.

Volunteering and delegation

Recently, more companies are participating in volunteering projects, by providing their human resource. The volunteering activity comes in two forms. First, employees work for a HRO and perform the tasks assigned. Second, the employees are delegated as experts, providing knowledge and expertise to relief activities. For example, IBM sends volunteers to a disaster response center to build and maintain hard and software. Deutsche Post World Net and TNT provide logisticians to design and facilitate the humanitarian supply chain [14].

Application of key expertise

The private sector not only provides funding, but also their expert knowledge for humanitarian logistics [15]. There are much potential for collaboration in logistics. Companies can provide transportation, skill, and IT solutions. For example, Deutsche Post World Net has established a long term relationship with the UNDP and the United Nations Office to strengthen disaster preparedness. Under the agreement, they will train UN workers, local groups, and custom officials. They will also offer to help manage and operate the complex logistics processes to react to natural disasters. Microsoft has developed IT systems for different organizations to coordinate relief efforts, and Coca-Cola has donated bottled water to people in disaster affected regions [14]. World Vision Canada also developed the last mile mobile solution (LMMS) with the collaboration of private sector organizations such as Field Worker and Intermec. It could significantly improve the local communication efficiency in disaster affected areas.

Private sector involvement in disaster relief and especially in the logistics sector is enormous in Asia. We use the Asian Tsunami of 2004 as an example. After the Tsunami, UPS donated 3 million USD, airlifted medical supplies and emergency relief items to the affected region. FedEx provided free shipping and storing of emergency supplies and provided trained volunteers and transportation services for distribution of materials. COSCO provided emergency ocean transportation and contributed 2 million USD, to the Red Cross. DHL donated flight charters and money and transported customer donated items to the victims.

Supply Chain Structure in Asia

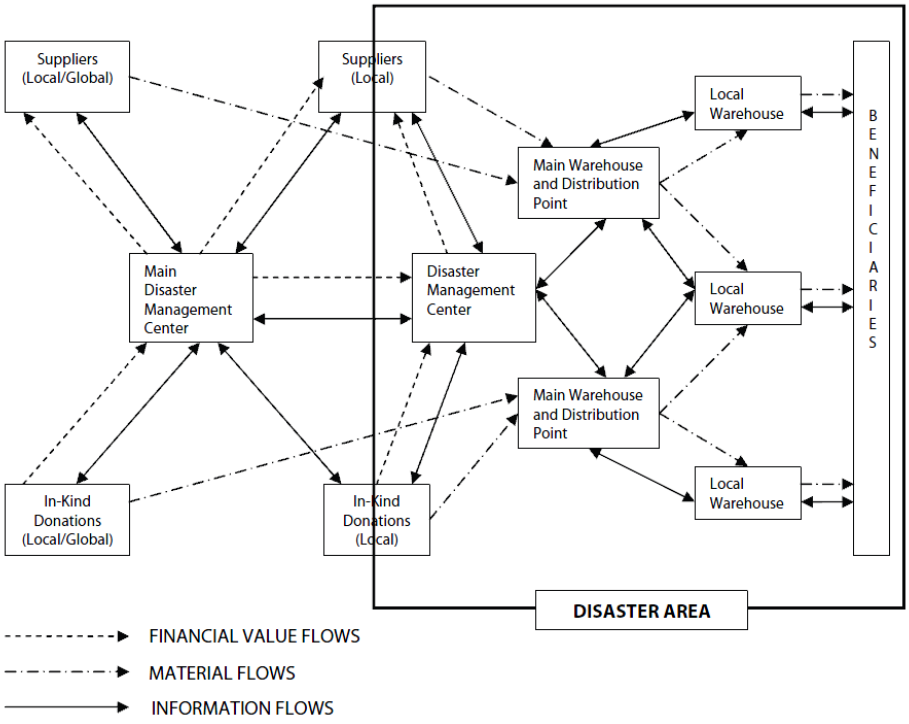


Figure 3: Generic Structure of Relief Chain. (Adopted from Ilhan, [10])

The typical flows in the humanitarian relief chain are illustrated in Figure 3. Both the financial value flows and information flows are important means to help create and smooth the material flow from suppliers to beneficiaries. Main disaster management center and disaster management centers at the local level play an essential role in this network to help coordinate different parties and to make decisions. However, in most cases the structure is more decentralized and dynamic with lots of information flows and decision making at the field level [16]. In Asia, it is the central government has the role of a main disaster management center.

CHALLENGES

There are many challenges involved in humanitarian logistics. The challenges can be categorized either by the type of disaster, or disaster relief phases, or the type of humanitarian organization [17]. We list five challenges as we believe they are the main challenges that need to be addressed for Asia.

Table 4: Categorizing Challenges by Stakeholder Environment

Source of challenge	Input/output environment	Competitive environment	Regulatory environment	Internal stakeholders
Perspective				
International humanitarian organization perspective	Delays Lack of funding Inappropriate donations Limits in use of funding Aid dependency	Lack of coordination	Dependence on government declaring state of emergency Lack of transport infrastructure Duties Lack of early warning systems Lack of governance	Lack of trained logisticians Lack of vehicles Lack of warehouse
Governmental organization perspective	Lack of supplies Lack of equipment Lack of funding Inappropriate donations Lack of access to water Difficulties in enforcing standards	Lack of communication Lack of knowledge of humanitarian organizations	Absence of legislation Lack of funding Streets have no name Security problems Difficulties in enforcing standards	Lack of trained logisticians Brain drain Lack of vehicles Lack of supplies Lack of equipment Lack of ICT

Source: Adapted from Kovács [17].

Security and Political Issues

The political situation in this region may be the biggest obstacle in humanitarian logistics operations. Countries have always been particularly concerned of the sovereign and territorial rights in all situations, even after a major disaster. They tend to decline external help and to seal off disaster information for national security [18]. The situation is worsened when there is military involvement. In the aftermath of Cyclone Nargis, the Myanmar government entirely ignored international requests for greater transparency and foreign aid was only allowed into the disaster affected area after much international pressure [11].

Besides the national security reason, another misconception many Asian countries have is that by accepting foreign help after a disaster is the same as saying the country is not capable. As emerging economies, these countries are eager to prove their capability in all aspects, from economy to social welfare. Therefore, countries block news, report false death toll, deny foreign aids and expel foreign media in the affected area.

National security and humanitarian intervention are two separate ideas that, unless reconciled, will continue to hinder the effectiveness of humanitarian relief operations in the region.

Coordination

Coordination is key when there are multiple organizations and agencies. However, because of the large number of parties participated and the different interests involved, it is also the most challenging part in any relief operation [19].

The major challenge of humanitarian logistics is to establish an efficient flow of supplies from various sources, which are not always timely, appropriate, or useful, with minimum waste of resources and time. The establishment of such a flow requires the integration and cooperation of all parties [20].

There is lack of an institutional leader or community in the region to integrate the efforts from different countries and NGOs [21]. The national disaster systems are created under clear political and legal mandates. At the regional level, several coordination centers and expert panels have been established since the 1990s, such as the ADRC and the ADPC. Unfortunately, the existing network seems complex and overlapping, which weakens its effectiveness [11].

Language also creates a challenge for humanitarian logistics in this region. When a disaster happens, local civil society groups are the ones who gain immediate access to the affected areas and be able to provide instant help. They are also the ones who have knowledge of local situations such as geographic locations of facilities and distribution of residents. But they often lack the expertise to carry out the relief operations [12]. International relief teams, though having expertise and equipment, lack local knowledge. As such, it is important for international relief teams to work with local civil society groups. However, most people speak their own language and they are unable to communicate effectively with international relief team members who use English as their working language, creating a communication gap.

In addition, there is a lack of government support of the country struck by disaster in terms of personnel, equipment, logistics, intelligence and policy support which hinders disaster

relief operations [22]. This lack of support results in poor coordination and eventually downgrades the entire relief operation. After the Asian Tsunami in 2004, international relief organizations sent unwanted supplies such as blankets and noodles when the disaster affected area needed crackers and tents because of lack of information from the local government [23]. In an interview with World Vision Asia Pacific, the worldwide NGO also point out that the donated materials and supplies sometimes need to wait for days or even weeks to get permission to enter the disaster affected area.

Finally, there are also coordination problems among the different relief agencies. First, most relief organizations are sponsored by a number of countries and they have limited autonomy to make decisions. The lack of autonomy not only limits their own operational effectiveness but also hinders their interaction with the other agencies. In recent disasters, we also witnessed excessive competition among the relief agencies during relief operations which are counter-productive. After the Asian Tsunami, too many organizations divided up territory between them and compete to outplay the others [24].

Needs and Damage Assessments

To maximize the utility of all available resources in relief operation, it is crucial to better match supply with demand. Therefore, continuous needs and damage assessments are very important [25]. However, there is often lack of equipment and expertise in the disaster affected area to do the assessment after a major disaster. The damaged roads and communication system in the area often do not help. As a result, the accuracy and timeliness of the needs and damage assessments become a challenge in humanitarian logistics [26].

Logistics Infrastructure and Information System

Very often, after a major disaster, the transportation and communication infrastructure in the disaster affected area are seriously damaged. Blocked roads and airports restrict the accessibility to the disaster affected area. The remaining land transportation infrastructure does not have the capacity to take the number of victims and relief teams that pour in and out of the area [17]. Sometimes, helicopters may be the only option out there with their limited capacities [27]. Information systems are often unreliable, incomplete, or non-existent. Jammed communication systems prevent efficient information management and increases uncertainty [28]. Utilizing the existing infrastructure and rebuilding the transportation and communication systems become an essential and urgent challenge after the onset of a disaster.

There are many small countries and island states in Asia which present their own humanitarian logistics challenges. Those countries do not have the capacity to develop and sustain national capacities in disaster management. A regional approach is needed to address this problem.

Unpredictable Demand and Supply and “Zero” Lead Time

In general, the demand is erratic in terms of the timing, location, size and type [29]. Supply information is also unreliable, incomplete or non-existent. As a result, it is very difficult to establish and maintain the supply chain between the uncertain supplies and the uncertain demand. Decision makers have very little reaction time to make decisions under high pressure, incomplete information and great uncertainties.

LOOKING FORWARD

Improving Communication and Coordination in Humanitarian Supply Chain

Given the ac-hoc nature of disasters and mass damage they may cost, it is important for different parties to improve their ability to respond to extreme events. It needs careful preparation, fast response and timely execution of plans from all parties to minimize the damage and loss. Coordination and communication are the two major challenges faced by humanitarian world which require more attention. The following are some major questions need to be addressed to improve communication and coordination in humanitarian supply chain in the future.

Questions:

Communication

- Are all disaster response parties in regular, efficient and transparent communication with one another about their respective roles, responsibilities, needs and strategies for disaster response?
- Is there any information sharing platform or channel for disaster response parties to share information? What is the efficiency and effectiveness of those platforms and channels?
- What is the status of the information technology used in humanitarian world? Is there any new technology which can be adopted by humanitarian actors to improve their communication?
- How to tackle the language issue when most Asia countries speak their own languages and international relief workers mainly use English as their official language?

Coordination

- How to strength the coordination among different humanitarian parties prior to and at the onset of a disaster?
- What is the effectiveness of the current UN cluster system? Is there better ways to strength coordination?
- What role should the host government play in humanitarian response in Asia? How to facilitate coordination between the military and HROs?
- How to facilitate better private sector participation in humanitarian response?

Building Collective Intelligence for Humanitarian Supply Chain

Collective intelligence has been widely studied and adopted in the business world, for potential customer allocating, marketing and traffic control. However, it is a relatively new idea in humanitarian world, which has huge potential impact to reshape the relief information system in terms of victim information assessment, demand and supply measuring and coordination.

Accurate and up-to-date information is crucial to facilitate the delivery of relief and development aid in humanitarian supply chain [30]. It is also one of the biggest obstacles to effectively match demand and supply in humanitarian relief effort. The emerging of social network and collective intelligence open a new door to overcome this obstacle. Useful information can be abstracted from individual calls, messages, and use of social network such as Twitter postings and blogs [31]. Questions related to building collective intelligence for humanitarian supply chain to be answered in the future are listed below.

Questions:

- What data should be collected?
- How to collect the data?
- How these data can be managed meaningfully?
- What technology and expertise are needed to synthesize these data?
- How to coordinate the many related initiatives to use the data effectively?

Establishing Long Term Partnership Between Host Government and HROs

Government and HROs are the two main actors in any humanitarian operations. Government often possesses the strongest mobility and response to disaster first. The national disaster management systems have the strongest capacity and authority to mobilize resources. However, there are many occasions when host government lacks the knowledge, personnel with expertise or equipment to handle disaster relief operations well. HROs have the lacking piece. HROs can bring in disaster management knowledge, relief teams and special equipments to the disaster area. Therefore, it is important to build long term partnership between host government and HROs to strengthen the coordination and cooperation between them. We list down the following questions about establishing long term partnership between host government and HROs remain to be answered.

Questions:

- How to build mutual trust and long term relationship between host government and HROs?
- What are the necessary government regulations and policies needed to ensure fast custom and security clearance of HRO personals, equipments and medicines and their fast access to disaster area?
- How to solve the national security issue related to HROs? What should HROs do to avoid sensitive political dilemmas?

CONCLUSION

The humanitarian logistics system in Asia is far from perfect. There are still many challenges faced by all the stakeholders. HROs, as one essential actor in the process, have the responsibility to help establish a comprehensive and efficient disaster management system in this region. There is also an urgent need for HROs to work closely to integrate and fully utilize their resources for the benefit of victims. In addition, HROs need to proactively seek cooperation with the governments and to establish long term relationships with the private sector to get support from them to improve the overall effectiveness of the humanitarian logistics in this region.

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