

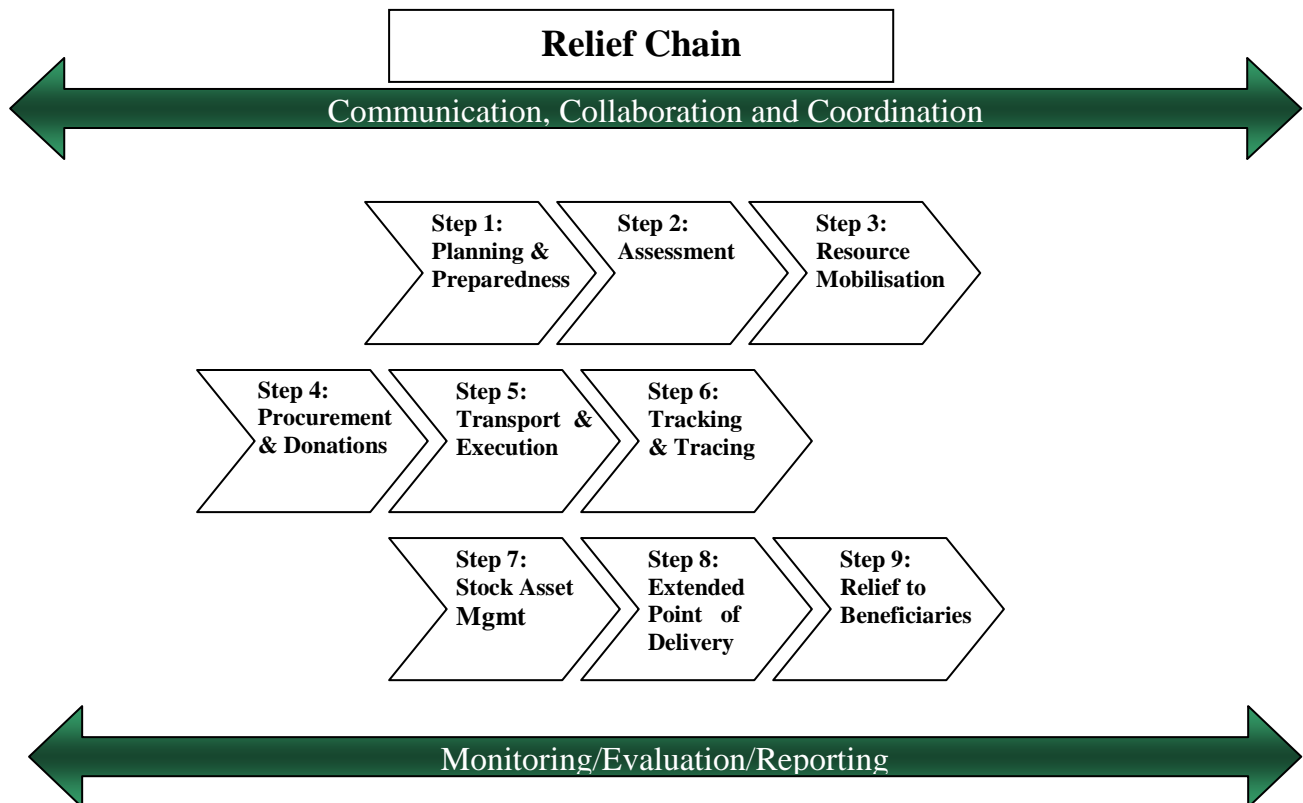
INSEAD HUMANITARIAN RESEARCH GROUP

An Analysis of the Relief Supply Chain in the First Week after the Haiti Earthquake

By: Luk N. Van Wassenhove, Alfonso J. Pedraza Martinez, Orla Stapleton¹

Introduction to Humanitarian Relief Supply Chain

In the wake of the devastating earthquake in Haiti, one of the aftershocks facing the country is not seismic in nature, but concerns the struggle to coordinate relief efforts in order to reach those in need most effectively. There are nine main steps in the humanitarian supply chain to consider when responding to a major disaster such as the earthquake in Haiti. They are:



Source: Fritz Institute, 2005

Considering the number of organisations, workers and relief items arriving on the ground, it is vital during a disaster response operation that these nine steps are carried out under the umbrella of communication, collaboration and coordination.

¹ Acknowledgements: The authors gratefully acknowledge Rolando Tomasini and Christine Driscoll for their comments on earlier versions of this paper.

The INSEAD Humanitarian Research Group (HRG) examines these steps in relation to the earthquake in Haiti in the week following the disaster. The aim of this paper is to give a picture of the current situation and the challenges faced in the relief supply chain. (A deeper and more general analysis of these steps can be found in the book *Humanitarian Logistics*, by Luk N. Van Wassenhove and Rolando Tomasini.)

Step 1: Planning and Preparedness.

This process takes place before a disaster. *Planning* includes written contingency plans and procedures to respond to disasters. Usually governments have their own national and local plans including organisations, responsibilities, priorities, and main actions to take in case of disasters. Most of the plans include several scenarios based on the level of damage caused. Humanitarian organisations also have their own set of plans, which are usually coordinated with the governmental plans, but can also operate independently².

Preparedness is related to making the system of response ready to respond to catastrophic events. It is not possible to be completely prepared to face the impact of an earthquake. However, planning and preparedness allow for a far more effective response (as demonstrated below regarding the situation in Haiti).

Planning for disasters is necessary at the organisational, national and international levels. Organisations such as the International Federation of Red Cross and Red Crescent societies (IFRC), World Vision International, Concern, Oxfam and various UN agencies operate a system of pre-positioning goods, vehicles and equipment at different hubs around the globe. These stocks are managed independently or under the banner of the UN Humanitarian Resources Depot (UNHRD). In the event of a disaster, humanitarian organisations can access essential supplies with minimum delays.

At the national level, disaster response committees (such as The National System for Preventing and Attending Disasters (SNPAD) in Colombia) aim to guarantee the efficient management of human, technical, administrative and economical resources necessary for the prevention and attention to disasters. In Haiti, as the state system in general (i.e., the government, infrastructure, economy, etc.) was already quite weak, the earthquake was a devastating blow equivalent to a knock-out punch. According to the Organisation for the Coordination of Humanitarian Affairs (OCHA) which is coordinating the relief efforts on the ground in Haiti, most organisations (e.g., UN, NGO's, government, etc.) were hit by the quake and needed a week before they were operational again.

Step 2: Assessment.

² Pedraza Martinez, A.J., Estrada Mejia, C., Stapleton, O., Van Wassenhove, L.N., 2009. The Armenia Earthquake: Grinding Out Effective Disaster Response in Colombia's Coffee Region. INSEAD Case No. 09/2009-5610

Assessments establish the magnitude of the damage, the availability of resources for the response, and the immediate needs of the victims. They are usually carried out in the first 72 hours after a disaster. They deal with giving the right amount of aid to the right people and play the role of demand estimation. They can be done by visual inspection, by asking people, by simulation or by sampling. There is some standard information used to assess the impact of disasters, including information such as, possible number of deaths and injuries, availability of local resources, public services like electricity, communications, and transportation services. Additionally, assessments take account of the immediate needs of water, food, essential medicines, shelter, coats and coffins. Usually assessments are carried out frequently during the first hours and days after an earthquake.

Initial assessments of the needs in the aftermath of a disaster, even in the best of circumstances, are difficult to carry out accurately. This is because it can be chaotic following such calamities; people are injured and dying, buildings are destroyed, and the primary focus is on search and rescue. In spite of these difficulties, the IFRC sends Field Assessment Coordination Teams (FACT) to the affected area to assess the damage and estimate the needs. However, as each organisation arrives on the ground they usually carry out additional assessments of needs to gain more knowledge of the situation. From these assessments, organisations prepare *appeals* for the specific types of assistance they need (e.g., food, medical supplies, etc.). OCHA is tasked with the role of coordinating the assessments, the dissemination of information regarding the affected areas and the appeals process.

In Haiti, although some international humanitarian organisations such as World Food Programme (WFP), Oxfam, IFRC and WVI were already operating on the ground, many of those present, including the UN Headquarters, were destroyed by the earthquake. The level of devastation made it very difficult to provide accurate assessments of the needs. According to OCHA, because of the devastation of these organisations, it had to make initial assessments and appeals based on experience instead of facts. Indeed, during the first two to three days estimates of the numbers of deaths ranged from 30,000 to 100,000. Here, the first assessment was carried out by the local government which estimated that the death toll would reach 100,000. The second was done by the IFRC which predicted 50,000 dead and one out three in need of assistance. One week after the earthquake the US military estimated that the death toll would raise to 200,000, making this a disaster of epic proportions (Lt. Gen. Ken Kin). In the week that followed the disaster, a major search and rescue operation was still underway, mainly executed by locals using their bare hands. OCHA still has no official count on the number of deaths thus far.

Further, in Port-au-Prince 90% of the buildings are estimated to have been seriously damaged making it increasingly difficult to determine how many people are left injured, homeless, and in need of immediate food and medical assistance. Infrastructure was also severely damaged due to the intensity of the quake and poor construction. Additionally, two hospitals and the main prison in the country were

destroyed. Thousands of prisoners escaped, adding to the heightened tensions in the affected area. OCHA estimates that 3.5 million people have been “severely effected” by the disaster.

Step 3: Resource Mobilisation – Financial and Human Resources.

Financial Resources and Donations

Once the response operation is underway, organisations allocate available resources and begin requesting additional resources via the appeals process. Appeals for disasters can be carried out by a single organisation acting alone or through broker organisations such as Global Impact³. The media plays a vital role in promoting appeals to the wider public thereby increasing the visibility of the organisations operating on the ground and what they need.

In the case of Haiti, the response to appeals was immediate and massive. The first bilateral donation of \$200,000 for immediate use, made by the Inter-American Development Bank, was given five hours after the disaster. Humanitarian organisations began appealing for donations on the first day after the disaster. The first organisation providing information to the public about their operation from the ground was WVI followed by IFRC, UN, ICRC, and Oxfam. Since then, bilateral and international aid pledges to the response have included \$604 million from the EU, \$100 million from the US for immediate aid with the promise of further aid, \$100 million from the World Bank and \$32 million from the UK. In France, it is reported that donations for Haiti already exceed the amount that was raised for the tsunami in 2004.

Some of this success in fundraising is greatly attributable to new communications mechanisms that have been put to use during this appeal process. For example, the American Red Cross raised \$3 million in one day via text messages. Also, requests for donations as well as information on how and to whom to donate spread virally via social media sites such as Facebook and Twitter. In spite of this outpouring of financial assistance from the international community, conditions on the ground have meant that little of it could quickly be transferable into deliverable aid thus far. However, this should improve in the coming weeks as the situation on the ground becomes more stable.

Human Resources

Human resources come in the form of professional humanitarian workers, volunteers, firemen, ambulance workers, police or military staff. Resources have different levels of training, skills, and affiliation. Training varies across organisations and within every organisation. Governmental agencies are used to having full-time staff. NGOs have full-time staff and also short-term contracts to cope with increased needs.

³ Hanson, M., Stapleton, O., and Van Wassenhove, L.N., 2008. Global Impact: Managing Corporate Giving. INSEAD Case Study No. 02/2008-5490

In Haiti, the first response came from the UN peacekeepers operating in Haiti and from well-established humanitarian organisations operating in the country, as mentioned previously. For example, the IFRC had 1000 volunteers registered in the country, although it is not clear how many would be in a position to help (due to the damage caused to the operations during the earthquake). Additionally, the organisation sent 400 staff to respond to the crisis. The International Committee of the Red Cross (ICRC) had 68 staff members on the ground including 9 expatriates. Oxfam had a staff of 200 people present in the country. According to OCHA, during the first week after the earthquake, 52 international search and rescue teams were mobilised by foreign governments, totaling 1800 workers and 175 dogs. These teams rescued many people from the rubble in Port-au-Prince. Now efforts are extending outside of the city limits to other affected areas.

A point of note is that humanitarian response operations have historically followed the principals of humanity, neutrality and impartiality. This has allowed them to operate with relative freedom in what is referred to as the humanitarian space⁴. In Haiti, the US sent 3500 soldiers and 2200 marines to cope with the disaster, and this number is expected to rise to more than 10000 troops. The main reason for the presence of military troops is to help stabilise security issues so that humanitarian organisations confront fewer difficulties when trying to deliver aid. Haiti was already a country with relatively high levels of crime. In the wake of a disaster such as this, crime heightens and security weakens due to the ensuing chaos as people scramble for resources. This can lead to looting and real violence. Military troops work to preserve and restore stability under these circumstances so that the flow of help to those in need can take place.

Step 4: Procurement and Donations.

In-Kind Donations

In-kind donations come in different forms and from several sources, using multiple channels. They may be planned or not. Planned donations usually respond to the needs identified during the assessment phase. Unplanned donations do not necessarily match with the needs of the disaster.⁵ Ill-considered donations such as food with a very low shelf-life can create major bottlenecks in the aid delivery process, as organisations struggle to manage the receipt and delivery of vast quantities of items. Organisations are obliged to waste time dealing with stocks that are not necessary but which cannot be disposed of. In the case of Haiti, this leads to the delayed entry into the blocked airport of more important items (such as urgent medical supplies).

In previous earthquakes, such as the one in El Salvador in 2001, FUNDESUMA, an implementing partner of the Pan-American Health Organisation and the World Health Organisation, set up an inventory management system called SUMA, at the airports in

⁴ Tomasini, R., and Van Wassenhove, L.N., 2009. Humanitarian Logistics. Palgrave Macmillan, UK.

⁵ Pedraza Martinez, A.J., Estrada Mejia, C., Stapleton, O., Van Wassenhove, L.N., 2009. The Armenia Earthquake: Grinding Out Effective Disaster Response in Colombia's Coffee Region. INSEAD Case No. 09/2009-5610

El Salvador to track all incoming goods and check them against appeals⁶. Greater visibility of the pipeline of in-kind donations helped the response effort to better define the procurement needs that had been accounted for, and those that were outstanding⁷.

In Haiti, no such system is yet in place, but ex-presidents George Bush and Bill Clinton, *Special Envoy to Haiti*, have been advising the public on what to donate. This information is also being disseminated on the websites of humanitarian organisations. It also should be noted that OCHA has requested cash donations in lieu of in-kind donations for many of the reasons mentioned above. It is important to focus on cash instead of unsolicited supplies that complicate relief efforts as they further clog the already capacity constrained airport, and often are sent with no mechanism for delivery to the people.

Procurement

Procurement is carried out using available financial resources or credit. The goal of procurement in relief operations is to enable orders to be placed and delivered on schedule at a good price. When possible, governments and organisations prefer to buy locally to avoid delay times and try to help the local economy. However, some organisations prefer to use their regular suppliers to guarantee the quality and standardisation of their supplies, or to get better prices⁸.

In the case of Haiti, international procurement has been used because of the devastation to the local market. Due to the proximity of large markets such as the US, Mexico and Brazil, procurement has proven relatively straightforward. The main problem has been in distributing the procured material.

Step 5: Transportation and Execution.

Transportation is critical to deliver aid at the right time and to the right place. It can take the form of planes, trucks, cars, boats, and even animals if necessary. However, transportation is dictated by road conditions, fuel availability, airports' and ports' capacity after disasters. The kind of vehicles which can be used depends on the access routes to the disaster zone and the distance to other urban centres able to provide help. *Flow capacity*, which is the capacity along an access route, is an important variable in

⁶ Van Wassenhove, L.N. and Tomasini, R., 2003. Coordinating Disaster Logistics after El Salvador's Earthquake using SUMA's Humanitarian Supply Management System, INSEAD Case No. 10/2003-5145

⁷ Tomasini, R., Stapleton, O., and Van Wassenhove, L.N., 2009, The Challenges of Matching Private Sector Donations to Humanitarian Needs and the Role of Brokers, INSEAD WP 2009/36/TOM/ISIC

⁸ Pedraza Martinez, A.J., Estrada Mejia, C., Stapleton, O., Van Wassenhove, L.N., 2009. The Armenia Earthquake: Grinding Out Effective Disaster Response in Colombia's Coffee Region. INSEAD Case No. 09/2009-5610

deciding the plan for transportation. Transportation might include governmental vehicles, army, humanitarian, volunteers, and private sector partners⁹.

In Haiti, executing the response operation has been, without doubt, the most serious problem. The airport which had already a low capacity was destroyed. The port was also badly damaged as were the roads in the country. Flights were re-instated on the third day after the earthquake with about 25 flights per day, but with a very limited capacity and serious fuel shortages stock. One week after the disaster planes and helicopters were still landing on a single airstrip. The airport is now receiving 100 flights per day, but the airport has no further capacity.

Due to these bottlenecks, access of international aid to the victims was severely constrained. This caused an increase in tension, which in turn increased security problems. By the time the UN and the US had begun air-dropping relief supplies to the victims, rioting and violence, as people scrambled for food, had become a real threat. Thus, albeit a natural disaster, security became a salient bottleneck (thereby requiring military presence as mentioned above). To mediate this problem, multiple distribution points would need to be set up simultaneously around the affected region, to avoid large concentrations of people and exaggerated waiting lines. This was not possible to achieve in the days immediately following the earthquake due to the lack of infrastructure. To ameliorate this issue, it is being reported that a number of private logistics companies (e.g., TNT, Agility, etc.) are preparing a logistics platform on the border with Haiti in the Dominican Republic. This should help relieve the capacity constraints at the Port-au-Prince airport and allow for additional supplies (such as urgent medical relief items) to enter into the affected areas.

Step 6: Tracking and Tracing.

Tracking is a forward process to determine the path followed by aid from origin to destination. Tracing is a backward activity to determine where the shipment was sent. Tracking and tracing are related to the goal of delivering to the right people, to the right place and at the right time. Additionally, these processes are essential to show impartiality and neutrality in relief operations¹⁰.

The main international organisations leading the response to the Haiti earthquake have well-established tracking and tracing systems that will enable them to carry out the response with transparency and accountability.

⁹ Pedraza Martinez, A.J., Estrada Mejia, C., Stapleton, O., Van Wassenhove, L.N., 2009. The Armenia Earthquake: Grinding Out Effective Disaster Response in Colombia's Coffee Region. INSEAD Case No. 09/2009-5610

¹⁰ Pedraza Martinez, A.J., Estrada Mejia, C., Stapleton, O., Van Wassenhove, L.N., 2009. The Armenia Earthquake: Grinding Out Effective Disaster Response in Colombia's Coffee Region. INSEAD Case No. 09/2009-5610

Step 7: Stock Asset Management.

Stock Asset Management is the process of organising warehouses at certain points, and organising the supplies held in those warehouses, for delivery. Warehouses and transshipment points should be located strategically to use the available infrastructure guaranteeing safety conditions for the assets and people. Usually during the response phase, warehouses are prepared.

There were only two main storage points in Haiti immediately following the earthquake. These were located on the grounds of the presidential palace and next to the airport. Once the aid arrived at these points, it proved extremely difficult to transport it further to the population in need.

Steps 8 and 9: Extended Point of Delivery and Relief to Beneficiaries.

Extended delivery points, or *last mile distribution* points are located in the impacted area. These are the places where supplies are staged before their final distribution to the victims of the disaster. Points of delivery should be chosen by taking into account the conditions of infrastructure after the disaster, access routes for assets, and distance to beneficiaries.

This is called the *last mile* problem. In other words, it is often difficult to efficiently and securely deliver aid to the right people and organisations. There is a risk that supplies will fall into the wrong hands when being transferred between international and local organisations and end up on the black market instead of where they are needed. This highlights the need for multiple points in stock asset management.

During the first week following the disaster, delivery was a significant challenge. Four or five days following the disaster, food and water began to be airdropped to the victims in an attempt to overcome the problems of reaching people by land. However, as mentioned previously, this led to some riots and violence as people clambered to obtain the necessary aid. As a result of this, the distribution strategy changed. Four main final distribution points were established in Port au Prince. The first was run by the US and the other three run by UN peacekeepers. Convoys of aid were required to travel with security escorts but distribution was expected to normalise with the arrival of more aid, troops and humanitarian workers.

The Relief Supply Chain Umbrella: Coordination, Collaboration and Communication.

In the wake of a disaster, communication is almost certain to be a problem. Although rare, in Haiti, affected people were using internet sites such as Youtube, Facebook and Twitter, to inform people of the situation, though many other communication lines were destroyed.

With such an influx of aid workers, military and others entering the fray, and often having differing objectives, coordination and collaboration among the organisations taking part in the response is paramount.

In a disaster the scale of that in Haiti, the UN activates the cluster group system (which was developed after Hurricane Katrina and the Tsunami in order to improve coordination). These cluster groups include:

- Water, sanitation and hygiene (Wash) cluster: chaired by UNICEF
- Camp co-ordination and management cluster: chaired by IOM for natural disasters
- Emergency shelter cluster: chaired by IFRC for natural disasters
- Logistics cluster: chaired by WFP
- Emergency telecoms and IT cluster: chaired by UNICEF / WFP
- Health cluster: chaired by WHO
- Nutrition cluster: chaired by UNICEF
- Early recovery cluster: chaired by UNDP
- Protection cluster: chaired by UNHCR / UNICEF

OCHA reports that the cluster system has proven successful in Haiti in creating a mechanism by which organisations can offer a coordinated response.

In this case, although the UN is coordinating the response, the US military are playing a visible and active role. Despite seemingly conflicting mandates, it is vital that those involved in the humanitarian operation find a way to collaborate in order to provide relief in a complimentary and efficient way. Without this, efforts are certain to be duplicated in some areas while entirely omitted in others. This would increase the sense of abandonment in certain sections of the affected population and hamper the overall relief operation.

Conclusion

We hope this analysis has helped provide information and understanding as to the huge scope of work and the great challenges faced by humanitarian organisations working in disaster relief. Often, humanitarians work 24-hour days, live in small tents, are living among insecurity, experiencing aftershocks (in the case of Haiti), and facing painful emotional situations. It is truly noble and courageous work that they do, and it is our hope that the knowledge and research conducted by the Humanitarian Research Group over the last ten years can help bring awareness and education to their efforts.

We invite you to learn more about our work and to contact us if we can be of assistance.

About the INSEAD Humanitarian Research Group (HRG):

Founded in 2000, the mission of INSEAD HRG is to develop a science of humanitarian logistics which facilitates cross-learning between private companies and humanitarian organisations.

The Group has produced over 30 case studies and research articles which are developed and disseminated in specialised education programmes, working groups, books, and professional and academic conferences. Since beginning its work in the humanitarian sector, HRG has seen and actively contributed to significant improvements in the logistics of humanitarian organisations. For example, the Group has assisted in the development of partnerships between private and humanitarian organisations, such as TNT and WFP, to improve the delivery of aid to people in need. For more information on the work of INSEAD HRG, please go to: www.insead.edu/facultyresearch/centres/isic/humanitarian/.

About the INSEAD Social Innovation Centre:

The INSEAD Social Innovation Centre, an inclusive platform for cross-disciplinary research and engagement in the area of social innovation, was founded in 2007. The Centre's aims to: 1) conduct research that advances the theory and practice of social innovation; 2) inspire people by providing the tools needed to make a positive impact on society through business; and 3) facilitate collaboration and dialogue among faculty, students, alumni, executives, companies, NGOs and other academic institutions. The Centre covers research and events in the following sub-groups: Humanitarian Research, Healthcare Management Initiative, Sustainability, Africa Initiative, Social Entrepreneurship, and Corporate Social Responsibility & Ethics. For more information on the INSEAD Social Innovation Centre, please go to: www.insead.edu/isic.