Quick Scan Humanitarian Logistics. Improving lead times for humanitarian intervention: A study of challenges, barriers and opportunities for Dutch NGOs

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TU Delft

Quick Scan

Humanitarian Logistics

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Executive Summary

An increasing number of people are facing the consequences of volatile events around the globe, whether due to natural causes or man-made crises. To prevent further physical, psychological, social and economic collapse after such a critical event, fast and effective humanitarian interventions are needed. However, the mounting frequency and intensity of these events has tested the ability of the international humanitarian community to respond quickly and effectively. This quick scan identifies key themes for improving the delivery of disaster relief during the critical response period (within 72 hours). Specifically, the analysis aims to identify industry best practices and success stories as well as challenges to be overcome.

The quick scan was initiated by the Dutch Coalition for Humanitarian Innovation, and financially supported by Save the Netherlands, the Metropolitan Region Rotterdam-The Hague (MRDH) and Delft University of Technology. The project is further supported by ArgusI, a logistics and supply chain consultancy firm. Throughout the project several NGOs and consultants have supported the project by providing their input and sharing their insights. The 'quick scan' is intended to be a starting point for future research regarding ways to remove logistical bottlenecks. This analysis includes a qualitative description of industry best practices and challenges faced in the field. These findings are based on desk research and interviews with experts from various disaster response organizations together covering a wide range of expertise and experiences in disaster response throughout the past decade.

The quick scan was initiated because many separate opportunities and ideas for innovations are presented. However, a more comprehensive overview of the challenges that these innovation (calls) aim to address was lacking. In other words, there was a clear technology and innovation push, versus a more analytical approach where improvements would create the most impact or contribute the most to more effective supply chains. The objective of the quick scan is therefore two-fold. On the other hand, it is intended to provide an overview of the current bottlenecks, best practices and potential gains in the field of humanitarian logistics, specifically in the first response activities after a disaster strikes, when emergency relief supplies are delivered. Second, this analysis will help to inform an innovation and research agenda moving for future projects.

The quick scan was conducted following a structure that first identifies the overall logistical or supply chain process for emergency relief items. Using this process as a guideline, various bottlenecks and challenges, as well as best practices were examined both through the review of academic literature and various interviews with people who have worked in the field or at headquarters during some of the biggest disasters in the past decade. We conducted semi-structured interviews with respondents from key (i)NGOs. Fifteen interviews were carried out and these focused on: (1) The general characteristics of the (i)NGO, (2) Experiences of (i)NGO: ways of working in past or current disasters (3) Processes at (i)NGO including stakeholders and responsibilities, and (4) (i)NGO strategies and policies. From the interviews and literature review, we distilled key challenges, issues and opportunities that contribute to a more efficient supply chain of emergency relief items. Core challenges identified throughout the project include:

- Process compatibility & integration: Many organizations work together in an integrated or intertwined way, both before and during a response, in the field as well as in HQ. Examining the processes in these organizations and their compatibility enables more effective supply chain orchestration.
- Pre-planning: Reducing the load and ad-hoc design and implementation of supply chains, through developing boilerplate approaches and scenarios that can serve as building blocks for emergency response, supply chains can be quickly designed and configured in emergency situations.
- Local presence: The local (on-site) presence of organizations provides a significant advantage for more effective supply chains. The global network of the Dutch Relief Alliance and its associated partners can be leveraged to support the on-site operations and provide valuable information.
- Strategic networks & alliances: Partners outside the humanitarian domain can bring valuable knowledge, networks and assets to support supply chains for the delivery of emergency relief, by establishing mutually beneficial relationships with commercial firms, military and transport agencies.
- Lean & Agile Administrative processes: Combined administrative requirements from donors, guidelines from own and other organizations and local legislation create complex administrative processes. Re-examining these processes can reduce considerably the overhead on the operations.

The key research and innovation challenges that could be addressed in future research and innovations, emerging from this analysis show that a majority of the challenges found lie in the improvement and preparedness of organizations. Developing and using scenarios, revised administrative processes and establishing networks are activities that can take place outside the so-called 'hot'-phase (i.e. during an immediate response). While such activities ask for an investment (time, resources) upfront, they result in additional capabilities, tools and resources that will enable a more effective supply of emergency relief when disasters strike. Specifically, through an improved, more informed, decision making process, a reduced overhead of administrative tasks (resulting in more time for operations management), and a more effective use of resources (through the use of networks). However, these improvements will likely require not only a once-off investment, but a continued commitment of the organizations. For example, by maintaining the network, updating information and training staff.

Nonetheless, the conclusions of this quick scan show the state of the art of supply chain implementation for humanitarian interventions and potentially important areas for improvement. Table 1 provides a visual summary of the results of this quick scan. It should be emphasized that the content of the Table is not definitive in any way, rather indicative as a result of the nature of the qualitative quick scan analysis.

Table 1. Summary of results

Barriers	Success Factors	Main Root Causes	Challenges
› Funding uncertainty	› Local Presence	› Trust and contacts	› Process compatibility/ communication
› Needs versus capacity assessment	› Agility of Supply Chain	› Uncertainty	› Pre-planning versus flexibility
› Field versus administrative reality	› Pre-financing and Established Partnerships	› Preparation	› Local presence and expanding network
› Delayed financing	› Trust		› Lean/Agile administrative processes
› Donor requirements			
› High staff turnover			

Project description

1

In the aftermath of a large-scale disaster, the quick delivery of humanitarian aid to the affected population is considered a key challenge. The immediate rescue and response stage (within 72 hours) are critical for search and rescue operations, as well as to the long-term recovery of a vulnerable community. These interventions are for example supplying the affected population with the critical relief items to address the most immediate humanitarian needs. Depending on the type of crisis these items can be food, shelter, medical and various other supplies. Furthermore, other forms of assistance are offered such as medical staff, disaster response coordinators and experts. However, the circumstances in disasters present several challenges to humanitarian agencies. These challenges include among others, identifying and understanding the needs and size of the affected population, coordination with other NGOs and governmental agencies, uncertainty about available funds, international and local logistical challenges and cooperation of (local) government for access.

1.1 Motivation

The aim of the project is to improve the impact and effectiveness of critical humanitarian aid in the first 72 hours after a large-scale critical event. More specifically, to ensure that Dutch (i)NGOs can support the right critical, emergency relief items timely (within 72 hours) in an effective and accurate manner. The project aims to identify the challenges faced, consider best practices, highlight opportunities and propose solutions for improved agility of the Dutch (i)NGOs.

The project aims to support the development of adequate and grounded solutions to the challenges faced in humanitarian interventions. We therefore need to understand the state of the art and current best practices in humanitarian interventions, the barriers and opportunities and identify clear challenges that need to be addressed. Through this analysis, we can articulate specific challenges in which innovation would support the effective delivery of emergency relief, relating to the direct problems that humanitarian organizations face. At the same time, the challenges also help to guide innovators and developers to steer their ideas in a direction that aligns with the organization's needs, as such ensuring a high potential impact for their solutions. In other words: the quick scan serves as a starting point for connecting innovators and humanitarian organizations around grounded topics that have been identified by people working in the field of humanitarian supply chain.

1.2 Objective

The outcome of the quick scan is two-fold. First, the quick scan aims to identify (critical) success factors for fast intervention, and the timely delivery of the right items in the immediate stages (first 72 hours) after a major disruptive event. These success factors determine the necessary conditions for successful intervention. Second, the quick scan also identifies barriers and obstacles for a successful rapid intervention. These barriers can be generalized to the whole humanitarian system, but also specific to the Dutch (i)NGOs. Using these results, the quick scan provides specific challenges, opportunities and requirements for developing new solutions.

The results provide a clear direction for 'to-be-developed' innovations, specific for the Dutch (i)NGOs that would improve the agility for fast (global) interventions. These directions, ideas and proposals serve as input for follow-up development projects.

The result of the quick scan serves to support humanitarian organization in articulating their evidence-based needs and opportunities for innovation. Helping them to move from an innovation push-driven approach towards a more request-driven approach. The outcomes of the quick scan are a starting point for further discussions between the humanitarian organizations and those who contribute new knowledge, tools and innovations.

1.3 Approach

The project uses a qualitative approach consisting of literature analysis and interviews. The scope of our analysis focuses on the logistical information and coordination challenges of humanitarian organizations in the immediate response. In order to achieve the objective, the project starts with a 'quick scan'. In this quick scan the project partners examine the state of the art and the underlying challenges and opportunities for the project's target audience. This quick scan uses a three-step approach to find those challenges. Starting with an examination of existing literature, both from academic sources as well as reports from the humanitarian response. Next, we conduct interviews with staff from various humanitarian organizations that have participated in the delivery of emergency relief during crisis and disasters within the scope of the quick scan. Finally, we combine the results from this data-gathering exercise to identify several key factors. Specifically, the quick scan:

- Identifies organizations that on one or more occasion have successfully conducted rapid interventions and delivered emergency relief in one of the major disasters in the past decade. Next, the project examines what factors contributed to the successful interventions, what elements proved crucial to the effective delivery of aid, and what elements should be built on in the future.
- In addition, the project examines the state of the art regarding the Dutch NGOs, examining the challenges faced when delivering timely and appropriate relief items in the rescue and immediate response stage of a large-scale disaster. Specifically examining barriers and challenges that (may) have hampered the delivery of emergency relief to affected population. This will inform specific challenges that need to be overcome or avoided in the future.
- After the examination of this state of the art, the project explores possible solutions for the challenges and appraises whether these solutions can be applied within the Netherlands. Using the combined results from the 'success-factors' and the 'challenges' identified in the previous steps, we identify core thematic areas that cover both aspects. These thematic areas form the bases for the innovation challenges, providing directions on success factors that should be expanded upon and/or challenges that should be reduced or overcome.

Each of the challenges that result from this quick scan address a thematic area, and provides an overview of the background, the rationale behind the challenge, the core findings from the quick scan and key considerations when developing solutions to address the challenges. Finally, we look at the overarching characteristics of these challenges and how these relate to the focus of innovation and challenges in the field of humanitarian emergency response.

Data gathering
The data gathering comprised of both a documentation/data review, focusing on mission reports, lessons learned, existing guidelines and other existing (academic and grey) literature. This documentation review was augmented by the examination of the available data-sources (such as 3W, IATI, HDX).

First, we use the existing literature to get an understanding of the domain, providing information on the various stages involved in setting up a humanitarian supply chain. This structure provided the basis for the interview structures, as well as a framework for analyzing and categorizing the results from the data gathering exercises. Furthermore, in this data review we will investigate specific elements that have contributed or hampered the provision of emergency relief in humanitarian operations, providing the first insights where opportunities for improvement lie, which would be verified in the interviews.

Next, additional data was gathered through various interviews. These interviews supported the verification of the initial findings from the literature review and provided additional insights through personal experiences from the interviewees. Within the quick scan project fifteen interviews were conducted with both HQ/managerial staff (e.g. mission coordinator) and field staff (e.g. logistics coordinator). Based on the structure identified in the first literature review, the interviews focused on (1) the general characteristics of the (i)NGO, (2) experiences of (i)NGO: ways of working in past or current disasters, (3) processes at (i)NGO including stakeholders and responsibilities, (4) strategies and policies of (i)NGO. An interview protocol was developed with questions related to fast humanitarian intervention and the reviewed literature (attached in Appendix A).

Data analysis
The gathered data was analyzed by the partners in this quick scan project (WUR, TUD, ARG). The analysis focused on identifying and verifying the following aspects in relation to successful, effective and timely interventions in the immediate response stage: (1) best and worst practices (including lessons learned), (2) the state of the art of partners/focal organizations, (3) success factors/prerequisites for successful rapid intervention (requirements), (4) determine challenges to be overcome and (5) define proposals for projects that enable Dutch (i)NGOs to 'move' from state of the art to the necessary conditions for rapid, effective emergency relief. These resulted in several future research directions and specific project opportunities

Dissemination
The project results have been compiled in this report. The results, after agreement, may be used for (scientific) articles or follow up research. Furthermore, the results are to be shared through one or more presentations at appropriate meetings or events.

Partners
The project team was comprised of the following partner organizations.

- Delft University of Technology: Kenny Meesters (project lead), Isabelle van Schilt
- Wageningen Food & Biobased Research: Joost Snels, Seth Tromp, Auke Schripsema
- ArgusI: Lieke van Amelsfort, Monica Aciru

It also included a contact person at the (different) NGO-partner(s), to provide introductions, serve as a sounding board and provide guidance in the scope of the project.

1.4 Structure of the report

The report is organized as follows: the methodology of the quick scan will be discussed. Hereafter, the results of the literature review and the interviews will be presented. The results will be combined and analyzed in order to identify critical topics, key barriers and key success factors. Lastly, outcomes and clear challenges given from the quick scan are summarized in the conclusion section.

Approach

2

In this chapter, the analysis approach will be discussed. Two approaches will be used namely a literature review and interviews. In this manner, the quick scan provides insight on humanitarian aid based on the literature and on experience. First, we will elaborate on the literature review method. Hereafter, the interview procedure will be presented.

2.1 Literature Review Methodology

First, an extensive literature review is performed in order to get more insight on the state of the art and challenges and barriers for the delivery of disaster relief during the critical response period. Academic papers as well as reports are investigated to detect interesting information on this delivery within 72 hours. Literature is gathered by means of Google Scholar, Scopus and Google. The reports and papers have been extensively read and evaluated to get the desired information on the state of the art and possible challenges and barriers.

2.2 Interviews Procedure

The second approach is gathering data by means of interviews with experienced parties. The best practices, success factors, barriers and challenges that they faced in real disaster situation with respect to the timely effective delivery, can give many insights for the quick scan. We have aimed to select the interviewees on staff members who have been involved in a sudden-onset natural disaster during the initial period and in the delivery of emergency aid. The exact role within the organization of the interviewee can differ as well as the geographical location where they work (e.g. on the field or HQ). The focus of the sudden-onset natural disaster will be on the earthquake in Nepal in 2015 and the typhoon Yolanda (Haiyan) in the Philippines in 2013.

For different scenarios, we ask the interviewees what worked well, what did not work well, what would make it easier to reach the objective and which other success ‘stories’ do they know. The extensive interview protocol can be found in appendix A.

Results

3

In this chapter, the results of the literature review and interviews will be presented. Within both approaches, there are four stages of disaster response distinguished namely activation, request, delivery and impact. First, the information from the literature will be described. Hereafter, the best practices, barriers and challenges resulted from the interview will be discussed.

3.1 Literature Review

In this section, the four stages of disaster response are evaluated by means of the literature. Related concepts of activation, request, delivery and impact will be presented to get an in-depth knowledge on these four stages.

Activation

International emergency response is based on an analysis of humanitarian needs and coordination capacity on the ground, and in consultation with national partners. According to the UN definitions, the criteria for (cluster) activation are:

1. Response and coordination gaps exist due to a sharp deterioration or significant change in the humanitarian situation
2. Existing national response or coordination capacity is unable to meet needs in a manner that respects humanitarian principles.

The activation stage is characterized by uncertainties; most often adequate information about the size and gravity of the event is lacking or at least incomplete and uncertain; information is dispersed, and coordination has to be initiated. Following the general approaches and concepts in disasters response, the literature on activation concentrates on the (individual and organization) decision-making processes, (inter organizational) coordination and competition between potential assistance providers and procurement processes.

Decision-Making Process: Rongier, Gourc, Lauras, and Galasso (2010) illustrated a method that assists stakeholders in their decisions while carrying out a performance evaluation of the activities run during the crisis response operation (Abidi, de Leeuw, & Klumpp, 2014). Balcik and Beamon (2008) developed a simulation and modeling tool for facility location and stock pre-positioning decisions in a humanitarian relief chain responding to quick-onset disasters (Abidi et al., 2014). Tatham, Pettit, Charles, Lauras, and Van Wassenhove (2010) proposed an approach that assists the decision-makers of DRL networks by providing appropriate solutions regarding the strategic issues (i.e., the location-allocation problem) and the tactical issues (i.e., ordering policy problem) in preparation for a disaster. Zhan, Liu, and Ye (2014) designed an optimal stopping rule, allowing decision makers to determine how long decisions should be delayed in favor of gathering accurate disaster information. Their model can also dynamically allocate relief goods based on changes in disaster scenarios (Zhan et al., 2014).

Coordination: Coordination is understood as “the cooperation of independent units for the purpose of eliminating fragmentation, gaps in service delivery, and unnecessary (as opposed to strategic) duplication of services” (Gillespie, 1991). According to Richey, Kovács, & Spens, (2009) , regional maps of organizational presence have been developed for development aid, but who will respond to a particular sudden-onset disaster is less clear. Humanitarian logisticians need to find counterparts in other organizations, both in the field as well as between the headquarters of each organization involved. Relating back to the phases of disaster relief, the question in the humanitarian aid supply network is not only which other organizations are present, but also in which of the phases of relief they are present.

Competition: Competition for funding, media attention, and scarce resources can result in breakdowns in collaboration, coordination, and communication (Sheppard, Tatham, Fisher, & Gapp, 2013; Stephenson Jr & Schnitzer, 2006). According to Richey, Kovács et al. (2009), a challenge to humanitarian logisticians is to determine which organizations they can effectively collaborate with and for which purpose. Logisticians are torn between the front office media exposure of the organization, leading to the requirement to be first on site, which in its turn triggers donations to the organization, and the back office logistical operation that ideally puts the needs of beneficiaries first (Richey, Kovács, et al., 2009) This front office – back office indicates that humanitarian organizations do indeed regard each other as competitors, be it for the same funding resources or for media attention, while at the same time collaborators in the effective delivery of relief (Tatham & Kovács, 2007).

Procurement: Increasingly, natural disasters with its’ humanitarian emergencies have pressured humanitarian organizations to deliver aid quickly, appropriately, and cost-effectively (Abidi et al., 2014). A major improvement area for aid delivery is logistics in the form of procurement and transportation, which are estimated to cost around 80% of relief operations (Abidi et al., 2014). All humanitarian organizations require a clear ordering policy in order to efficiently procure commodities to the disaster site. Related to the lack of supplies is the issue of funding, humanitarian organizations struggling with culturally inappropriate in-kind supplies, and donors being interested in particular regions only (Richey, Kovács, et al., 2009). In-kind donations are often used to counteract the fungibility of monetary donations yet come with particular problems. As Hellenius and Rudbeck (2003) note, these donations often consist of inadequate, second-rate products, and create extra logistical costs of transportation and of maintaining the donations (Richey, Kovács, et al., 2009). Challenges related to the input/output environment need to be discussed with suppliers and customers, which in the case of humanitarian logistics primarily relate to financial and material suppliers. Special to the competitive environment in humanitarian logistics is an absence of anti-trust regulations; humanitarian organizations are encouraged to coordinate their efforts (Kaatrud, Samii, & Van Wassenhove, 2003). On the other hand, many humanitarian organizations are specialized in different types of disasters, relief phases, or items they deliver. Such a specialization and differentiation is usually seen as a facilitator of coordination in disaster relief (Kaatrud et al., 2003).

One state of the art technique described by Ertem, Buyurgan, and Rossetti (2010) focused on resource allocation and on avoiding inefficiencies in procurement of relief items. They proposed an auction-based framework where bidders (suppliers) and auctioneers (HOs) compete amongst each other in multiple rounds of the procurement auction (Abidi et al., 2014).

Request for Aid & Assessments

Assessment happens within the first 24 hours after the disaster strikes and professionals from humanitarian organizations are deployed to disaster locations and estimate the supply requirements in the area (Ertem et al., 2010). Allocating the available resources more efficiently is the principal objective of disaster-relief organizations and NGOs during disaster-relief operations (Medina-Borja, Pasupathy, & Triantis, 2007).

In the context of disaster relief, inefficiency in resource allocation can be defined as being unable to deliver the resources to the disaster location in the right quantity and at the right time. Acquiring the right amount of requested supplies is crucial to responding properly to disasters (Ertem et al., 2010). Timely response is necessary to decrease the fatalities and to preserve perishable food and medical supplies (Ertem et al., 2010). For this, the information availability and distribution are evaluated.

Information Availability: In the immediate response phase, remote aid agencies assume the needs of disaster victims based on very limited information (Jahre, Persson, Kovács, & Spens, 2007). Assumptions need to be made regarding the kind and quality of supplies needed, the times and locations of demand, as well as the nature of the potential distribution of these supplies to any point of demand (Jahre et al., 2007). Typical types of uncertainties Typical types of uncertainties (Liberatore, Pizarro, de Blas, Ortuño, & Vitoriano, 2013):

- Problems with data e.g. errors, noise, biases
- Problems with model e.g.: unknown or erroneous values of some important parameters, chaotic behavior, approximations
- Ambiguously defined concepts/terms
- Weak underlying assumptions
- Uncertainty due to projections of human behavior
- Transportation network uncertainties

According to Abidi et al. (2014), an appropriate IT platform for performance measurement and management in humanitarian supply chains should involve stakeholders in performance management.

Information Distribution: Nevertheless, many domestic non-governmental organizations (NGOs) self-deploy and distribute relief resources without collaborating with the government potentially causing an imbalance in the distribution, and an oversupply or undersupply of relief resources to affected areas (Sheu & Pan, 2015). Relief undersupply in the affected areas means shortages of relief resources including crew and commodity (Sheu & Pan, 2015). Such shortages may worsen hunger and suffering, increase the mortality rate and incidences of looting (Sheu & Pan, 2015). For example, in 2005, after Hurricane Katrina in the USA, one of Louisiana's greatest shortages was portable toilets, which were requested for the Superdome but never arrived there, as more than 20,000 people were forced to reside inside the dome without working plumbing for nearly a week (Committee on Homeland Security and Governmental Affairs 2006). Howden (2009) proposed that sharing information on the distribution of supplies allows staff to effectively monitor and evaluate activities as well as avoid the need for duplicate record keeping between logistics and programs (Sheu & Pan, 2015). Thus, this study considers willingness in information sharing.

Aid Delivery & Implementation

The actual aid delivery and implementation depends on the state of the country where the disaster has struck. The magnitude of the disaster does not in itself justify a call for international aid; rather, the ability of a region to cope with a disaster determines whether this call is issued. Considering a regional proneness to particular disasters, national humanitarian organizations may play an important role as they can specialize on the types of disasters that occur in their region.

Declaring a state of emergency: The declaration of a state of emergency is a necessary condition for immediate IHO involvement in non-armed and civil armed conflicts (Dube, Van der Vaart, Teunter, & Van Wassenhove, 2016). While some host governments facilitate good performance by declaring a state of emergency and relaxing regulations, others impose barriers that impede performance (Menkhaus, 2010; Pettit & Beresford, 2005; Toole & Waldman, 1997). Understanding why host governments display such heterogeneity in dealing with IHOs is crucial for enhancing delivery performance in humanitarian operations (Dube et al., 2016).

According to Tatham and Kovács (2007) pointed out, the very first response to a disaster is conducted by national organizations. Challenges of humanitarian logisticians may arise from a regional context as well as particular disaster types, the actual phase of disaster relief, and even the type of organization the logisticians work for (Richey, Kovács, et al., 2009). As a result of these characteristics, CANs proved to be more efficient at delivering critical supplies and in setting up points of distribution as compared to external organizations after the earthquake in Haiti in 2010 (Bealt & Mansouri, 2018). Many of the problems faced by external organizations related to the 'lack of connectivity with the local logistic networks that possess the knowhow, manpower, and assets to deliver supplies to the disaster area' (Holguín-Veras, Jaller, & Wachtendorf, 2012, p. 1637).

Local Presence (Field Office): Whilst IFRC and many faith-based organizations have a loose coupling between national "chapters" and an international coordinating body, UN agencies have no national presence per definition (Jahre et al., 2007) . This difference in organizational structure affects the response times of these organizations (Richey, Kovács, et al., 2009). National chapters are thus involved in the first wave of relief in the immediate response phase, Safran's (2003) "disaster element", while agencies with no presence in the affected countries need to wait to be officially invited in order to enter the country (Richey, Kovács, et al., 2009). HOs can choose locations first and then work on a supply strategy to develop local capacity (Tatham, Pettit, Charles, et al., 2010). The latter are so-called community-based disaster preparedness (CBDP) programs, which deliver projects aimed at empowering communities so that they can manage their own disaster risks. A lack of logistical training of humanitarian staff is evident – as in other regions as well (Perry, 2007). From the perspective of logisticians, the problem is the unavailability of in-country training and education possibilities (Richey, Kovács, et al., 2009). At the same time, GOs suffer from a brain drain. The combination of the lack of supplies, lack of training, and absence of mandates leads to situations such as NADMO's personnel being equipped with life vests for floods but not having been trained to swim, while navy personnel having sufficient training but no life vests to distribute to beneficiaries (Richey, Kovács, et al., 2009).

Manpower – Collaboration: According to Rodríguez-Espíndola, Albores, and Brewster (2018), the variation of labor and material resources makes resource management among different organizations an essential element to satisfy the needs of disaster victims. Logistics decisions rely on having the required resources to perform activities efficiently. In large-scale disasters, providing guidance for joint participation of different stakeholders is not a trivial issue. Currently, however, emergency logistics papers are designed as if there is only one organization owning all the required resources (Rodríguez-Espíndola et al., 2018). Disaster preparedness plans ought to consider the participation of different organizations to resemble the circumstances in reality and to become enablers for coordination (Rodríguez-Espíndola et al., 2018). Results showed that an absence of collaboration can lead to poor level of service even with enough resources for the situation (Rodríguez-Espíndola et al., 2018). It is key for government organizations to collaborate with each other in order to achieve better operations and avoid duplication of efforts or uneven coverage (Rodríguez-Espíndola et al., 2018). Coordination is a widely known challenge which can be underpinned by several reasons such as (Rodríguez-Espíndola et al., 2018):

- Involvement of several actors
- Absence of standardization among organizations
- Donor independence
- Appearance of self-initiated participants

Managing those resources is challenging because of jurisdictional boundaries, shortages or excess of resources, complications sharing information, and mixed allocation of tasks and resources among different organizations (Der Heide & Irwin, 1989). A system capable of providing a setting for guiding and directing participant organizations in order to satisfy the needs of disaster victims could mitigate the impact of those problems (Rodríguez-Espíndola et al., 2018).

According to Nurmala, de Leeuw, and Dullaert (2017), vertical collaboration between humanitarian organizations and their suppliers can help to lower purchasing costs (Richey, Pettit, & Beresford, 2009). Horizontal collaboration between humanitarian organizations will increase efficiency and effectiveness of also lower cost (Tatham, Pettit, Schulz, & Blecken, 2010). An example of horizontal collaboration in humanitarian logistics is the "Get Airport Ready for Disaster" partnership by Deutsche Post DHL Group (DPDHL) and United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA), in which Deutsche Post DHL provides airport-related primary logistics services and support activities such as training (Rueede & Kreutzer, 2015).

Assets to Deliver Supply: Delivery capacities are also vital, in particular the synergy between facility location, stock prepositioning and relief distribution. After the earthquake in Haiti in 2010, the government and several relief agencies struggled to get the aid to many people. Even with different organizations and expertise on the field, there was an inability to deliver aid because of the lack of trucks (Rodríguez-Espíndola et al., 2018). This is in line with the classical covering location problem; a model shows how to site limited numbers of emergency vehicles, such as ambulances (Zhan et al., 2014).

According to Richey, Kovács, et al. (2009), few organizations have their own fleet but rather use local transportation providers to distribute their aid items. Thus, local transportation service providers are important actors in the humanitarian aid supply network. Transportation costs are also high due to the requirement of special materials handling equipment, and the lack of access to remote areas. Remoteness and isolation being highlighted as challenges by Altay, Prasad, and Sounderpandian (2009). In essence, the high transportation costs in a country are related to both infrastructural as well as managerial questions (Pedersen, 2001). Furthermore, in many regions there are no street signs and names, adding to the complexity of an efficient response to fire and medical emergencies (Richey, Kovács, et al., 2009). The lack of support equipment further extends beyond transportation-related assets to Information and Communication Technology (ICT) infrastructure (Richey, Kovács, et al., 2009).

Fuel shortages can also develop very quickly in disaster areas (Sullivan, 2005), sometimes simply because fuel-pumping stations are demobilized during power shortages (Jahre et al., 2007). Transportation itself is not the biggest problem in disaster relief operations, as airdrops of supplies is always a last option to deliver the necessary goods to disaster victims (Wichmann, 1999). However, often there is a shortage of materials handling equipment at the receiving end (Trunick, 2005). Packages thus need to be small so they can be handled by a single person (Jahre et al., 2007; Murray, 2005; Wood, Barone, Murphy, & Wardlow, 1995).

Because so many people need help, it may seem like maximizing the total cargo sent is an appropriate objective. Unfortunately, this approach often leads to a chaotic situation in the field, where too few logisticians handle huge amounts of products, without the proper infrastructure in place, creating new or worsening existing bottlenecks (Tatham, Pettit, Charles, et al., 2010). According to Tatham, Pettit, Charles, et al. (2010), a supply network should be designed which enables better response to most natural crises occurring all over the globe. Improving logistics majorly increases three performance dimensions of relief operations: effectiveness (quality), responsiveness (time), and efficiency (cost).

Moreover, specialty products in the disaster relief networks are mainly referred to as the perishable products, e.g. medical commodities, blood products and packed milk, with strict and fixed lifetimes (Rezaei-Malek, Tavakkoli-Moghaddam, Zahiri, & Bozorgi-Amiri, 2016). This makes the humanitarian aid delivery even more complex and challenging.

Impact of Aid & Efficiency

In the aftermath of natural disasters, vital resources e.g. food, water, tents, clothing and medicine are usually not readily available to the victims of the natural disasters (Ertem et al., 2010). Although it is usually a logistical challenge to provide these resources to the victims because of the infrastructural damage and the chaotic environment after the strike, some of this challenge can be addressed by effective resource allocation (Ertem et al., 2010).

Adequate preparedness can significantly improve disaster response activities (Rodríguez-Espíndola et al., 2018). For example, hydrological disasters are some of the most frequent and harmful natural disasters (Chang, Tseng, & Chen, 2007). Nevertheless, these disasters allow more time to react (Kunz & Reiner, 2012) because these are more easily predicted and prevented than other disasters, making them suitable for the development of preparedness tools. There was evidence of an absence of appropriate planning, preparation and risk analysis in the region for managing these situations (Rodríguez-Espíndola et al., 2018). In the pre-disaster phase, preparedness plans and risk-prevention actions, such as infrastructure and building reinforcement, reduce damage in disaster prone areas.

3.2 Interviews

In this section, the four stages of disaster response are evaluated by means of the interviews. Related concepts of activation, request, delivery and impact will be presented to get more insight in experience on these four stages.

Activation

Best practices: During activation, it was emphasized that there needs to exist a clear structure to initiate a relief operation. Following any disaster, there is usually a buzz of activity and information. A positive approach highlighted in the interviews was the approach used by the DRA. Within the DRA, there is an agreement called the Acute Crisis Mechanism. The DRA calls the Ministry of Foreign Affairs, usually the head of Humanitarian Department of Foreign Affairs, to check whether the disaster at hand is significant, if a so-called Joint Response is necessary and where the government will provide resources. There is an extensive mapping available of all of the 14 DRA members, the presence of the members in every country is known as well as to what extent they had operations in the last few years. Additionally, all of the contact data for the DRA members is available for 24/7 accessibility. Following the Nepal earthquake in April 2015, a Skype call was arranged between the DRA members and within a short while, all 14 members were online. Some of the members were already arranging the first steps, whereas others did not know what was going on. Based on the information gathered from the members in the Skype session, the situation in Nepal was identified as a major disaster according to the criteria of the DRA and action was needed. The criteria are, among others, number of victims who have died, accessibility and whether the members can add value compared to others. With this action, the first step was taken which was the decision for a joint response. The next step was to appoint one member to take the lead in the Joint Response (JR). The selected organization also signs the contract with the Ministry. This is a large responsibility and the organization usually gets compensated for it. The practice is to set up a Joint Task Force (JTF) so leadership is not taken by just one member but three. The third step is an inventory of concept notes. The JTF provides formats and guidelines to ease the alignment process. In Nepal, a number of the DRA members were active and hence, a funding of four million was raised.

To further optimize decision making, the respondent argued that the process should be more streamlined as everyone is involved in all aspects and information processing is too chaotic. Additionally, simulations of disaster responses should be incorporated frequently for the main office and in the field. Simulating a disaster would make people aware of what to expect and need to do in an actual situation thus improving the response process.

In terms of pre-financing, some organizations have specific procurement rules for logistics which is aligned across the board and not specific for each country office. This, however, is not arranged among the DRA members although it would be the ultimate goal for the Ministry that the Netherlands humanitarian sector operates as one company.

Collaboration is also critical to disaster response. Save the Children (StC) for instance identified UNICEF as important in the education sector since they have all kinds of agreement with the government to get the necessary material through customs quickly. It can however also be a sensitive matter, particularly collaboration with the military when the organization wants to portray neutrality in the field. Such collaborations can sometimes be necessary for short term interactions for instance when their products and machinery (vehicles) need to be used but the organizations need to be wary of this becoming a political issue. Collaborations can also come from international multinationals such as instances where KLM offers some flights for free to humanitarian organizations in the context of emergency aid.

Barriers: From the interviews, a number of bottlenecks were also identified in the process of activation. Lack of accessibility in a disaster area could greatly hamper operations. One respondent discussed this in the case of Sudan following the huge increase in violence. The main focus then was on collecting information to identify gaps and needs. The organizations then quickly set up a joint assessment between five partners in a region where information was missing. The first thing to do in such a scenario is to collect information from NGOs, UN, Embassies and try to get to a plan as quickly as possible. In South Sudan, it was too dangerous to make those assessments and then it loses the urgency. Once everything gets overturned in a country, it is very difficult to get an overview of the situation and responses can be delayed for several weeks.

On the contrary, in Vanuatu (Rey, Le De, Leone, & Gilbert, 2017), the activation was quickly put together. It was an important factor that you need to be able to access the area. An unsafe area due to a natural disaster can usually be solved in a few days, but with violence it is much more difficult. Natural disasters in an area with an already man-made crisis have much slower responses. In South Sudan we were unable to access an area for several weeks and then when we arrived, they had already moved on. In Nepal (2015), many areas were also unreachable, but this also depends on how developed a country is. Cell phones were used to send emergency calls, that caused disaster risk reduction (DRR), which helped a lot.

In the procurement process, a number of organizations also experienced bottlenecks. For one organization that needed to procure infant powder for instance, they did not have a preferred supplier and they had to look for what is available locally. In terms of the procedure to follow, you fill a standardized form called procurement request (PR); this form is very detailed but without brand name e.g. Infant powder, 500-gram lactose free. The organization is not allowed to contact a supplier to ask for the price of a delivery. These are organization's internal guidelines for corruption and fraud prevention. Procurement office scans the market and decides where to buy.

Procurement can also sometimes be slow. For one organization, you first need to make a PR considered that it takes two to three days until you know what you need to fill in a PR. In case of large amounts of money, the PR needs to be approved by two or three people and then approved by the procurement department. Hereafter, the organization needs to purchase it. Sometimes you need to tender it, or a sealed bid (20 days published before analysis). This is too long in case of emergency. The solution is to preposition. You have an agreement framework with a number of suppliers that have enough stock for direct deliver, or you have prepositioned stock yourself. In that case, you simply do a call forward and within one to two days the goods are on the spot.

Information sharing and providing a general overview of commodities can also be challenging. You can make spreadsheets in advance and then it would be good if all the different NGOs can fill them in what they can add. A joint dashboard in real time requires a good connection and more technical challenges, but it would be a huge improvement. Such a system, no matter the disaster, would be helpful. Something that can have different aspects overlaid, so that you can see all the gaps in real time; the main issue is the overview. After that, we would need the monitoring of whether what people have promised is actually delivered. See what has been committed and what has been delivered. This process however goes a lot faster when you have pre stocked.

Another issue raised was coordinating in procurement and delivery. According to one respondent, the greatest barriers in making aid delivery more efficient was knowing what the gaps are, which is so difficult in most areas. More specifically establishing the capacities is more difficult than the needs. Connecting it via an online system would be really useful. There are too many little islands of NGOs that are not cooperating. We have for instance tried joint procurement, but people were unwilling to change their whole procedure. The UN for instance procures large quantities, but they too have troubles with efficiently delivering goods. A warehouse in South Sudan has been robbed completely empty, which shows their issues with guarding their stocks. A company could give them really good advice on those issues. On the other hand, everything with the ministries is difficult, but easier to improve than the other factor.

Request for Aid & Assessments

Best practices: In Nepal (2015), OCHA arranged information sharing and tried to avoid duplication of effort. A helpful success factor was the standardization of assessment tools, which was useful for getting an overview of information. An app called “Kobo collect” was used as a central platform for standard questionnaires and data gathering[1].

Ideally the whole process for request for aid and assessment takes 72 hours. This was successful in the case of Nepal (2015). Within 72 hours, there was a decision, a press release from the Dutch Government, funding was granted, OXFAM was appointed as lead member, a JTF was set up and locations and sectors were selected. Nevertheless, there was continued planning after 72 hours and adjustments had to be made based on new insights.

Key information for assessments can be retrieved via field locations through people on the ground who do focus group discussions and interviews with stakeholders in the field. It should no longer be the case that the local people are no longer actively involved in these decisions. That also gives them more reasons to be protective of what they receive.

For one of the respondents, a strict leadership also fastens decision making processes. There were very clear procedures that people respect and kept. Giving access to quick systems such as financial systems which allow for quick money transfers, shortening the decision procedure and would give more decision power to the people in the field, a so-called delegation of authority.

Barriers: Communication is so fast these days that pressure on reporting and time increases significantly. After consultation with local own staff or allied personnel, plans are collected, and choices are made on issues as which locations will be supported by the JR and which sectors will be covered. In this first phase, OCHA does not have a complete overview, but UN websites are checked for what is available at that time. The risk for inefficiencies such as double delivery is there at this stage. The main sources of information are the field offices and field assessment from local staff.

While carrying out the assessment, you talk to people in the field that are already there for some time and collect secondary data in order to identify the needs. After that, you talk to beneficiaries such as women with their babies, probably with an interpreter. Then, you have an overview of what the need is and what is available. However, data refinement costs time.

[1] https://www.humanitarianresponse.info/en/applications/kobotoolbox

Additionally, language barriers can pose a problem. It would therefore be pragmatic to have translation computers to remove language barriers.

Information can be difficult to access during this phase. According to the respondents, the hardest information to access is the parts where aid is missing. You can assess what will be needed, but you cannot easily assess what everyone else is doing and where an organization can add a lot more value.

Aid Delivery & Implementation

Best practices: Locally sourcing commodities is in almost all cases cheaper and better for the local economy and less likely to disturb the local market dramatically. In Nepal (2015), for one organization interviewed, one of their first tasks was to prepare a report on the situation to assess the real damage, accessibility, housing etc. Their report to integral advised that Nepal needed canvas in order to prepare for the rainy season. Area partners set up the programme for procurement. The organization always sources goods locally and not from the country of origin.

Having a local representative in the field was highlighted as vital in providing humanitarian aid. Local presence can also be in the form of an international organization coordinating humanitarian efforts with local organizations already in the field as highlighted by one of the respondents. At the time of the Nepal disaster (2015), they did not have an in-country program. However, it is a member of Integral Alliance which is a worldwide alliance of about twenty Christian organizations that provide humanitarian aid. Therefore, by coordinating with the other Integral members who did have an in-country presence, the international organization had a head start in its response. Similarly, in the Philippines (2013), the respondent found that quick response was more likely if the organization already had a local presence.

Furthermore, operations can be improved by linking preparedness to local partners as opposed to own staff. A case highlighted was the Emergency Preparedness Plan (EPP) by CARE. Two months before the disaster took place, CARE had a test that Kathmandu would be hit by an earthquake. CARE has an Emergency Preparedness Plan (EPP) worldwide. Every 3 years each country office has to set up an EPP based on protocols, standardized annexes, identification of possible suppliers, scenario-analysis in partnering and which donors can be approached. In the past preparedness planning was devoted to the own staff but currently, preparedness includes the linkage to local partners also.

Additionally, according to one of the respondents, humanitarian organizations need to be proactive in seeking information which can be a bonus to humanitarian operations. There are well known humanitarian procurement centers where one can call in and ask what is available. For this, the experience of other large business with warehouses could be learned from how they handle certain process in logistics.

BUSA was highlighted as a solution. Logistically, the cooperation with business is a real chance that should be taken. This is not about asking for money but about specific help or advice. Take up one or two problems and really focus on those together with companies, the UN and try it out in a few countries.

Availability of information was also highlighted as pertinent to humanitarian operations and specifically, physical emergency aid. In such cases, you need information on whether the physical transport is possible, that is, are there broken bridges for instance, information on the accessibility, do parties allow you to transport the aid. You need good warehouses, good contacts with potential suppliers, your whole supply chain needs to be in order.

A useful component for facilitating the availability of information was in the form of smart platforms and mobile technologies which can have a significant impact on the communication. The respondent emphasized that stimulating that would of course be very useful for emergency aid.

For programme implementation, a best practice highlighted by one of the respondents is cash handout by phone when goods are available locally. If the market is analyzed and found not to be strong enough, however, then the goods should be made available; otherwise people have nothing to buy. Also, the market analysis needs to incorporate if there any plans of free supply of these goods in the first days, since this will disrupt this system.

Bottlenecks: Below are some of the bottlenecks in aid delivery and implementation that were identified during the interviewees. In case of a disaster, there is usually a lot of air traffic. It can be challenging to find a flight to the area. Lack of local presence can considerably delay operations as cited by one organization regarding their response in the Philippine crisis (2013). When they arrived to respond to the Philippines crisis, the disaster was too big for local capacity to handle and not many NGOs had a daily presence in the area at the time. They had to start up a network themselves which is much more expensive and time-consuming. The initial delay caused by starting up the organization was substantial, as they needed to find employees for handling finances, operations, IT, logistics, and so on.

Another issue highlighted is the problem of logistic cooperation. It would be good for example to know what is available in the Netherlands that can be transported immediately in case of emergency. Not only what the NGOs have in stock now, but what kind of agreements can they make with companies such as Philips, Unilever, Port of Rotterdam to support quick response. Some organizations have information on stocks all over the world that can be ordered in case of emergency. It would be valuable to open this information to all the NGO's and give them all access to this information.

Similarly, coordination with international stakeholders to avoid duplication is important. When organizations are not coordinating, either work is prepared twice or at the end, neither one is doing it or both things occur. Lack of communication is the cause, and some unwillingness to share the aid in a somewhat competitive environment. One respondent says organizations keep their procurement plan safe and do not share it with other organizations. They make a secret proposal to their donors and consequently things are procured twice.

Poor coordination with local stakeholders also affects the provision of aid delivery and implementation. A poor practice highlighted by one of the respondents was the case of rebuild of housing, which was slow, because the government was unable to deal with all the materials supplied and the required licenses. The government was leading while UN/OCHA provided support. First, a lot of licenses were handed out, but then the government put this on hold and a new Ministry was put into place and everything started all over again with respect to licenses. It caused a serious delay in the recovery process.

Bureaucracy can also complicate aid delivery and implementation and in those instances, one needs to get creative. A case highlighted was in Yemen where a cash program of over a million (currency) was thought of which would have to be approved by an international board. That would take more than 6 weeks, so the organization applied for a waiver. Procedures are followed 99% of the time, so not always. For instance, the countries where there have been responses earlier, they can recycle previous agreements. In Vanuatu, for instance, there was a small typhoon where there had also been a typhoon three years earlier. Here, it was easy to make agreements since they had previous experience.

In humanitarian aid and implementation, the last mile can also prove to be problematic. There is sometimes a lot of delay in this part of the supply chain (e.g. customs). According to one respondent, the largest bottlenecks are customs clearing, data checks (correct information on which decisions are made and; information that is shared between NGOs. This information shared is either informal or formal via UN clusters. Informal information sections via (personnel) network. Global logistics clusters are used as a formal instrument/platform for this purpose. The informal information is shared via (personnel) network which are the most important.

Impact of Aid & Efficiency

Best practices: In the discussions regarding best practices for the impact of aid and efficiency during humanitarian operations, the following themes were identified as key by the respondents. It is important to have good financial systems and to have a culture of daring to take risks. Usually for emergency aid, you need to make an initial investment, and later the sponsoring will follow. Promoting taking risks should be focused on. Additionally, regarding the agility of the supply chain, well-elaborated policy, procedures (well-worked team) and personal camping kits must be available. Also, the schedules need to be clear such that everyone knows when it's their turn. Prepositioning and network of partner organization are important in these situations.

During pre-planning, simulations can be carried out. The respondent recommends that organizations arrange kind of tabletop simulation for countries where disasters are expected to happen. The DRA has a group that focuses on countries where it might go wrong such as DRC, or Kenya. However, for instance for Bangladesh the research group was set still because there were so many immediate disasters. The focus is now going to be on preparedness. If you can get an overview for certain countries, updated every two weeks or so, of the different sectors and what they have going on. Focus can also be on informing people on how to react when disasters strike. Software, training on what the people then have to do. For some countries it is easier to predict what kind of disaster is going to strike, but it would be possible to assess what kind of organizations are present there. The UN has such overviews, OCHA also, but only if there are already country offices. For Nepal, for instance, they were not ready.

Barriers: Below are some of the bottlenecks identified in the impact of aid and efficiency during the interviews. In the area of financing, sometimes a donor can be slow on financing and that delays the whole process, especially in the first few weeks. An example of that is the ministries. According to one respondent, their organization asked if they could pre-finance their own plans and then once the ministry finally has read the proposal, they pay the organization. However, it gets difficult when there are a lot of plans that need to pre-financed. So, we are then asking them to pre-finance some of our plans. The DRA midterm evaluations showed that the ministries are just too slow with responding to action plans. They ask questions that are irrelevant to approving a proposal. Once the plan has been approved, they quickly (within three days) ask for an update which is way too fast.

The framework and scope in which some donors operate can also limit the impact of aid and efficiency. Some donors are too limited in how they want to respond. One donor identified by one of the respondents for instance wants to only employ lifesaving activities, but then in a famine it makes much more sense to also give them seeds and tools, next to waste baskets. And if they want that, they need to operate much faster.

The situation on the ground can further limit aid and efficiency. In conflict areas for instance, access is limited. It is also difficult to get an overview of actors on the ground and ensure their quality if they are not NGOs. Another big issue is how you can keep the standing capacity of emergency aid if there are no disasters. Then the more technical issues are the time of transferring money, internal procedures which are slow, if there is no stock present in the warehouses. Focus should be on using products from locals, as to not disrupt markets but sometimes you need products in warehouses. Targeting of the most vulnerable groups of people is also very relevant, because those are the hardest to reach. During acute crisis this is even more difficult.

During pre-planning, there is not enough emphasis on the impact of the aid and its efficiency. It is important to distinguish between the factors that prevent delivery of aid and the political factors. Political factors are by far responsible for the issues, systematic not taking preventive measures until there is a real crisis. Most solutions are sought in the technological sector, but that should be a second thought. We need mechanisms that ensure preventive measurements are taken. The whole model of international emergency aid is based on giving aid during acute crisis and that needs to be changed.

Sometimes, there is lack of a complete picture of an organization's stock. One of the respondents for instance pointed out that their organization is not aware their pre stock. They do not have worldwide organized warehouses and there is not a complete overview of what is where nor where that information would be available. Such information would lead to much quicker responses, especially with natural disasters which are so sudden onset.

Analysis

4

4.1 Relevant / Critical Topics

In the interviews and the literature various topics have been mentioned that either serve as best practices, specifically something that has worked well and supported the delivery of emergency relief items in the past, or a barrier, which is something that has inhibited the effectiveness of delivery aid. Although some of these elements are referred to by different terms or names, (depending on the organization, context or background) they refer to the same elements. Furthermore, some elements are closely related or indicate the same root-cause problem domain. However, some elements refer to multiple aspects in the supply chain or the process of delivering aid.

In order to analyze these different elements, we have grouped them in different areas related to a generic overview of the humanitarian supply chain. This supply chain model is a generic overview build on the reviewed literature and refined by the interactions with the experience of the humanitarian staff that we interviewed. This model is not meant as a conclusive overview of how humanitarian logistics work nor is it meant as a definitive output of this Quick Scan. However, it does help us to group, relate and classify the various elements uncovered in both the literature and interviews.

We have divided this model in three different stages. While this stage in reality overlap and occur (partly) at the same time, they are not static and can be happening at the same time or in a different order. They are also cyclical in nature, i.e. feedback loops, due to sensemaking and adapting to changing circumstances. We have separated them here for the purpose of clarity and classification of the various elements discussed.

- ***(1) the activation stage*** which forms the start of a (potential) deployment. The activation stage comes into motion immediately after a disaster has occurred. In this stage, the different stakeholders mobilize over an appropriate and effective strategy for aid delivery. It involves activities such as assessment, fundraising, procurement, deployment. Eventually resulting in a decision on whether or not to respond to a disaster, who to collaborate with and the approach towards donors and funding.
- ***(2) the planning and implementation stage*** encompass the actual delivery of the (emergency) relief items. Based on the initial assessments, funds and other decisions made in the tendering stage, a plan of approach is developed in this stage (programming). This involves connecting to various logistical partners, procuring relief items and designing/implementing the logistical plan (both internationally and in-country). In this stage various audit, tracking and reporting activities are executed as well.
- ***(3) the reporting and monitoring stage*** involve the administrative and evaluation tasks during a disaster. This happens in parallel to the actual aid delivery and afterwards. The donor who finances the humanitarian aid, request a report of (financing) the performed aid to audit, evaluate and monitor the expenses. The donor has specific requirements on what should be reported or how the money should be spent. From the monitoring and evaluation of the aid during the critical response period, lesson learned can be retrieved and used for the donor reporting. The donor is thus a critical actor is this stage.

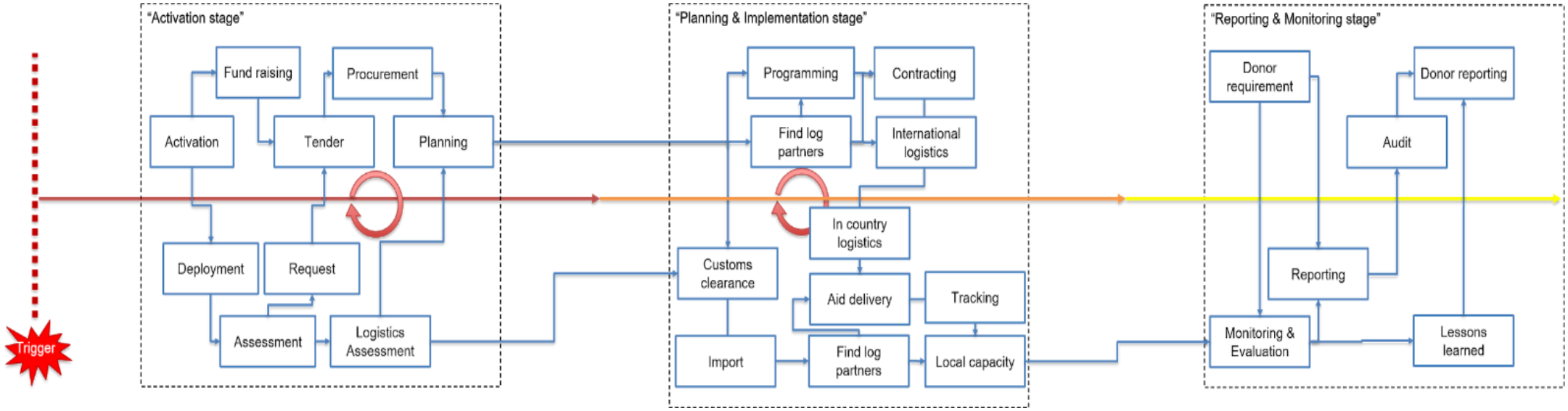

Figure 1. Three stages of humanitarian emergency response

4.2 Key Barriers

Throughout the analysis, both in the literature and the interviews we identified several key barriers that hamper setting up the supply chain for emergency relief items. These items have been identified and verified in various interviews and sources. We can group these barriers under the three stages of setting up and managing a humanitarian supply chain, used throughout the quick scan: (1) activation, (2) planning and implementation, (3) reporting and monitoring.

First, the two main processes in the activation stage are tendering and administrative/financing. Tendering defines the need and capacity assessment problem, the alliance formation in the (i)NGOs and other stakeholders involved and the decision to act upon a disaster. The need and capacity assessment issue describe the trade-off between the resources that are actually needed for aid delivery and the resources that are available. This is not a one-on-one match and therefore, there are continuously seeking on what they should deliver and what not, and how this affects other aid delivery. This is also influenced by funding and donor requirements. The administrative/financing process deals with the funding uncertainty for the aid delivery. Moreover, the temporal disconnects of the funding, thus spending first and getting it reimbursed later, and administrative process could lead to grand problem regarding delivery in the critical response period. There is also the barrier of limited funding, thus not enough money to be able to provide a good aid delivery during the critical response period. Lastly, the field versus the administrative reality causes many problems since the gap between what actually happens in the field and how it is noted or how it should be noted is large.

The planning and implementation stage have programming and the supply chain as the main processes. For programming, the dilemma of paying in cash or in-kind can create issues for the schedule. Moreover, sourcing the disaster relief area via local or import resources could be a critical factor for the 72 hours delivery period. Next, the assessment of programming can be a challenge. In the supply chain, the local (logistics) capacity and the connection between local and international supply chain is an opportunity and barrier at the same time. When the connection and capacity is well-established, this is a good opportunity to use the supply chain synergies during the critical response period. However, if no collaboration is established, competing supply chains can exist and inefficient (and slow) delivery will occur. Also, customs, thus importing resources, could be a bottleneck for the supply chain. Moreover, the critical infrastructure such as airports and harbors are a barrier for the aid delivery during the critical response period. These infrastructures are necessary for aid delivery but could also be struck by the disaster. This makes the logistics and the infrastructure assessment even more difficult. Also, mapping the logistical network in an area that has been affected by a disaster is hard and therefore, a bottleneck.

Last, the reporting and monitoring stage for the critical response period aid delivery can be sub grouped in two main challenges namely monitoring and evaluation and reporting/auditing. The challenge to evaluate on the lessons learned and documentation is present. Moreover, with the monitoring and evaluation there is a high staff turnover needed which could be limited by non-available staff. Also, the ad-hoc nature of the monitoring and evaluation is a barrier for aid delivery in the 72-hour time period. The reporting and audits still happen on paper which can lead to paper trails that get lost or incomplete information. Moreover, there are also requirements from the donor with respect to reporting and audits. This leads to a lot of work for the staff whereas they should deliver aid. There are also the barriers of the delayed financing which leads to inability to spend money needed for the critical aid.

Figure 2 visualizes the three different stages, their main barriers and the relation between them. The stages are described in a fishbone diagram in which the further down the “bone”, the more towards the deeper/later stages. Thus, this diagram should be read from right to left regarding the timeline of the stage.

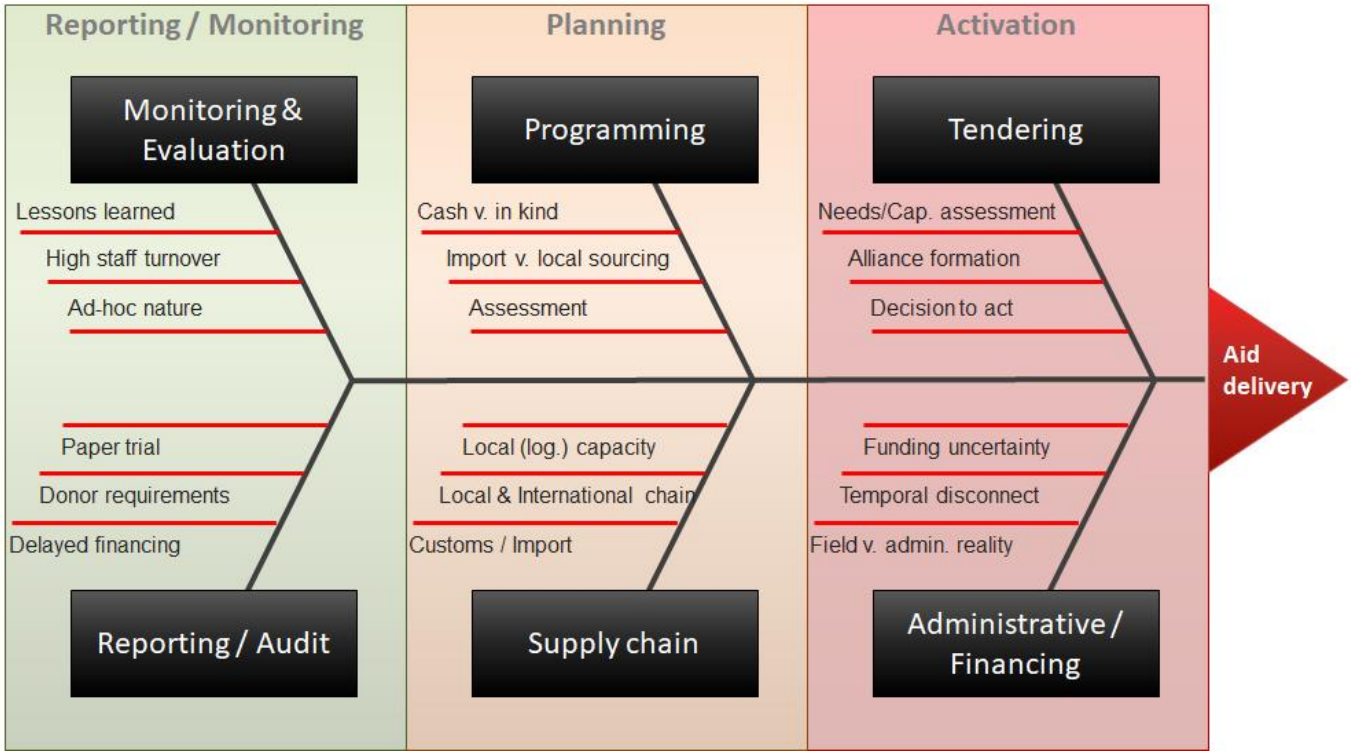

Figure 2. Key barriers of humanitarian emergency aid delivery in three stages

5.3 Key Success Factors

In this section, the key success factors that are identified by the literature reviews and interviews are discussed. There are four main success factors namely the local presence, agility of the supply chain, pre-financing and established partnerships and trust.

Local Presence

The local presence of an organization is seen as a success factor. By this presence, the organizations are able to make a quick assessment of the needs of the affected people. This leads to more up-to-date and relevant information which has a positive effect of the aid delivery. Moreover, the local context and capacities can be understood better when local presence is available. This results in a clear overview on what is possible and what is needed in terms of aid delivery.

Agility of Supply Chain

The agility, or adaptability, of the supply chain has been mentioned as a success factors numerous times. The connection between the local and international supply chain is an important element. It would be beneficial to connect with local present international companies who already have a logistic network such as Heineken, Philips, Shell or Coca Cola. These international companies have their own logistics network that could be used for aid delivery and it is relatively easy to connect with them due to their international character.

Moreover, prepositioning in the supply chain helps but only partly solves the problem. This element helps for warehousing, e.g. retrieving resources from different parts of the world, but not necessarily increase the timely aid delivery. Another aspect to this agile supply chain is that it should be opportunity driven.

Pre-financing and Established Partnerships

Pre-planning and pre-financing help the timely aid delivery during the critical response period. This reduces the elements that have to be arranged “ah-hoc”. Thus, they can focus on other more important situations in the field. Also, the established partnerships are an important factor for the pre-financing. Quick resourcing and procurement are seen as a success factor for humanitarian aid delivery. Existing and established partnerships can contribute to the fast resourcing and procurement.

Trust

Trust is a key success factor for timely delivery in the 72-hour period, in particular trust in finance and trust in the field staff. Trust in finance needs to be presents since in most cases, the money is transferred later than it is needed. This means that the money is spent before it is actually received and thus, trust in financing is necessary. Next, the trust in the field staff is very important for aid delivery. Organization should trust the field staff to make the right decisions, even if the administration needs to be “bend” for this. The field staff is locally present, and the organization should trust them to make the right decision based on the context of the disaster. Only then, the aid delivery can be performed effective and thus, timely.

Conclusion

5

Combining the findings from the interviews and the literature review, we can see different thematic areas emerging. Certain topics have been mentioned as best practices that contributed to an effective humanitarian supply chain in certain cases, while the same elements have been mentioned as a barrier in other cases. These dualities illustrate the complexity within the humanitarian aid.

Main Root Causes

From the analysis, some root causes are also identified that should be considered when improving the delivery of goods during the critical period in disaster areas.

Trust and contacts

Many of the current approaches to establishing humanitarian supply chains, rely on trust and personal contacts. Especially in the field, existing connections and quickly establishing new relationships is crucial to establishing effective supply chain. These connections provide staff in the field with more reliable due to increased trust and a mutual understanding, for example on the mission objectives, constraints or processes. Moreover, relationships and networks provide field staff with more options and alternatives. For example, by having multiple transportation options, a bigger pool to select staff from or a more extensive network in the local community. These options provide fieldworkers with more flexibility which helps to strengthen existing processes and make their operations more resilient to change.

This ‘room to maneuver’ in the field has been often mentioned throughout the quick scan. The chaotic environment in which often these emergency relief supply takes place, require humanitarian workers to be able to adapt quickly to changing circumstances. These changes could be due to unforeseen circumstances, such as secondary effects from a disaster, a change in policy or legislation following a disaster (an element that has been mentioned often, especially in relation to customs and import regulations), or changes in processes or organization of the NGO (such as staff changes). In any case, this flexibility and autonomy should be encouraged and supported as it (in general) contributes to a more effective and stable supply chain.

Uncertainty

Uncertainty during the humanitarian aid delivery is an important and difficult element. In all stages, uncertainty plays a role for example funding uncertainty, planning uncertainty and uncertainty on what is actually happening. In the interviews and literature, the specific aspect of operating in the field of emergency response and disaster management, the aspect of *uncertainty* is frequently mentioned. The disruptions that follow a disaster make it hard for organizations to develop and implement supply chains. Due to the disruption, the business-as-usual situation no longer applies, and organizations have to re-evaluate their strategy. Hereby, impulsive solutions can be presented that do not always contribute to the most effective aid delivery.

This uncertainty can hinder the effectiveness of the aid delivery within the critical period and thus, it is desirable to reduce the uncertainty. Although the humanitarian emergency response will also have to deal with uncertainty in these complex situations, the uncertainty could be reduced with data. When data is available on the current situation or on previous (similar) disasters, it is easier for organizations to pre-plan. Simulation-based scenarios can be designed and thus, the response can become more efficient and effective. However, not everything in a disaster relief can be pre-planned and predicted and therefore, uncertainty is one of the main root causes that should always be considered.

Preparation

Preparation is an important aspect to consider when improving aid delivery in disaster areas. Hereby, it is meant that organization prepare aid delivery instead of arranging it during the “hot phase”. The “hot phase” is the moment when the disaster has already struck, and aid delivery should be executed. Thus, by good preparation, decisions and other things will be moved outside the “hot phase”. More considered decisions can be made and therefore, there is a higher probability of an effective aid delivery in the 72-hour period.

Preparation can move things outside of the “hot phase” by developing boilerplates. It is known that in some countries, a disaster will strike within the coming year. For example, there is a high probability that there will be an earthquake in the Caribbean. For these cases, organizations can already prepare scenarios where they will respond to this disaster. They can create simulation models to see what they can expect or what they roughly should do. Note that the actual impact and time cannot be predicted but they can already create boilerplates to ensure quick response. Next to this, building networks and contacts upfront would help with the humanitarian emergency response. This preparation is based on expanding the network which is useful in case of the disaster relief.

Challenges

6

The results from the quick scan, presented above, reveal several key challenges and opportunities that are relevant for the Dutch Humanitarian Community. On the one hand, these challenges build on the constraints, barriers and limitations identified in the quick scan such as administrative constraints or pre-planning. On the other hand, these challenges build on best-practices and opportunities identified that support the rapid delivery of relief items in the immediate response to a disaster, such as the use networks and partnership or the local presence.

We have grouped these opportunities and challenges together in 4 key challenges presented below. These challenges can serve as (the basis for) a research & development agenda for the partners of DCHI and the Dutch Relief Alliance. Moreover, the challenge can be used to encourage, direct and align the development of different ideas to improve the rapid response capabilities, for example by using these challenges in 'calls for proposals. Finally, and aside from the specific research & development challenges relevant to the Dutch Humanitarian community, these challenges can serve as a starting point for research into rapid humanitarian logistics and emergency relief on a larger (international) scale, supporting other ongoing research and development by universities, NGOs and humanitarian agencies.

The challenges themselves are presented in a concise (two-page) format for easy dissemination. Easy challenge contains an introduction and brief problem outline. Followed by an 'objective' that could be achieved by addressing the challenge, along with specific requirements that should be considered when developing a solution or approach to address the challenge. Each challenge also provides the expected outcomes that could be used to support the evaluation of proposed solutions. While these challenges are presented in a concise format, they build on the results and findings of the research presented above, i.e. more information on the background, motivation and contents of the challenge can be found in the report.

Innovating the above-mentioned challenges would improve the ability for the Dutch (i)NGOs to respond quickly. There are clear opportunities regarding the flexible and predefined process, the pre-disaster logistical planning and the involvement of partners with joint on specific requests. Moreover, the innovative answers to these challenges need to be cross-cutting, considering the field conditions (reality in the field), organizational adoption and inter-organizational integration.

Challenge I	**Challenge II:**	**Challenge III:**	**Challenge IV:**
Process compatibility & communication	Pre-planning versus Flexibility	Local presence, partnerships, and networks	Lean / Agile administrative processes



6.1 Challenge I: Process compatibility / communication

Introduction and Problem Outline

Organizations work closely together to reduce lead-times and ensure an effective response. Working together, organizations can use each other's logistics networks, resources and capacities. There is currently already an effective collaboration and high trust between the Dutch partners at the organizational level. However, each organization has their own processes and structures that need to be coordinated and aligned in a crisis situation. Improving the cross-organizational compatibility of these processes helps to reduce the lead times of delivering aid.

At the strategic level, the Dutch partners are well integrated and have formed strategic alliances. Most notably the Dutch Relief Alliance (DRA). As part of this alliance, the partners work together to share their knowledge, resources and capacities both before, during and after deployment to a disaster. However, each of the partners has their own organizational objectives, mandates and processes. These organizational structures have evolved in their own organization using the experiences over many years. Some organizations are also part of a larger international organization or umbrella organization which also imposes certain rules and regulations on the specific organization in the Netherlands (via rules or voluntary adopted).

Challenge objective

The objective of this challenge is to improve the process compatibility between the Dutch partner organizations. This improved alignment of the processes will ensure a more efficient operationalization of the delivery aid in the critical response period. Also, this helps to identify the right persons and "entry-points" for each organization which contribute to a more timely and effective delivery. Alignment of the processes enables and provides a common language between the partners. Not only at the strategic level but also at the tactical and operational level. This enables organizations to more easily connect to each other and enables them to easily share the right information with the right person. This will also reduce the administrative and communicative overhead between organizations.

Improving the alignment of the process could take place in various steps. First. a mapping would help to determine when and how the various internal processes of the organizations relate to each other. At what point, during an activation, would the different organizations 'connect' with each other and what information would need to be exchanged and between whom. This would enable organizations and their staff to more effectively connect to the right person. Following the mapping of the processes and information exchange, possible improvements could be identified to optimize these exchanges and connections, ranging from facilitation communication (contacts lists) to more integrated information systems for sharing information.

Requirements

When examining options to improve process capability and organizational alignment between different humanitarian organizations it is important to consider various requirements:

- Each organization has their own process and regulations that need to be followed. Often these procedures result from requirements imposed by other organizations such as funding agencies which may change over time. Organizations are often part of larger international networks: a Dutch NGO maybe part of an international equivalent for example. These larger networks or parent organizations also impose their procedures, regulations and compatibility requirements on organizations. It is important therefore not to design new procedures meant to replace existing ones, but rather create interfaces that link different approaches and processes together.

- Organizations also have to consider a trade-off between coordination costs and the benefits of an aligned process. While a joint or aligned approach provides additional capacities and capabilities, reduces the risk of duplication and creates synergy, it comes at an increased coordination cost. Especially in sudden on-set emergencies quick decision making are required which reduces the time available to coordinate and align with other actors. Such systems and approaches should therefore be in place, familiar, maintained and (frequently) used outside active emergencies.
- Coordination and alignment do occur frequently in humanitarian organizations. There are international agreements for example to exchange information, align missions and deployments, and jointly develop strategies/agenda's, illustrated in the figure below. Likewise, at the operational (field) level, organizations use various mechanisms, procedures and systems to align and coordinate (for example in the cluster system). However, outside active emergencies and at the national headquarters level improved information exchange and easier communication between administrative departments and desk officers before and during an emergency.
- Finally, it is important to design systems (whether technology driven or not) that enable asynchronous information exchange. While information is currently exchanged between partners it often occurs in meetings, bi-lateral phone calls or other forms of ad-hoc communication. Pre-established systems can enable a more real-time, asynchronous way of accessing and sharing information reducing the coordination costs even further.

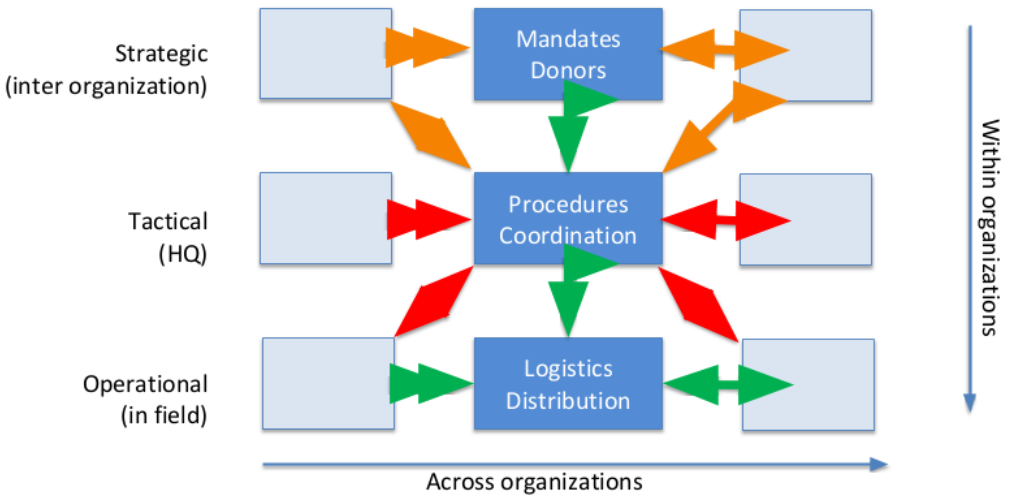

Figure 3. Simplified overview of organization layers involved

Expected outcomes

The expected outcome of this challenges would have similar characteristics as systems (encompassing technology, procedures, people and data) that are currently in use in the commercial sector in supply chains. These systems enable different partners in the supply chain and/or market to inform each other and align their decisions. A prime example of such systems is 'Vendor Managed Inventory (VMI)' systems that enable different partners in the supply chain to be aware of the status of the inventory of their customer and adjust their production accordingly. While the Dutch humanitarian community has its own unique aspects including a more net-centric approach rather than a supply chain, similar concepts could be examined and applied.

The outcome would be a reduced ‘coordination cost’ at the operational level between the organizations. As a result, the communication and continuous information exchange between the organization's would be more streamlined, and -although counterintuitive- the decision-making process would be improved through an improved, continuous understanding of the capabilities, capacities and decisions of partners.

As organizations can connect easier and exchange information, the costs (time and resources) required for coordination will go down while at the same time more informed and aligned decisions can be made. Such investments (resources required) could be made outside an active emergency and will be mainly once-off, however the benefits will be noticeable during a response.

6.2 Challenge II: Pre-planning versus Flexibility

Introduction and Problem Outline

A key characteristic of humanitarian interventions in general -and response to sudden on-set natural disaster in particular- is the uncertainty faced in identifying the needs, planning the response and managing the operational logistics. Disasters can happen anytime, around the world and their impact cannot always easily be determined. However, this information is crucial to plan, implement and monitor the delivery of emergency relief supplies to affected areas. For each situation a new plan has to be developed of what items need to be sent (needs assessment), where these items can be purchased and the funding available to do so (procuring), and the logistics shipping and distributing those items (supply chain).

While there is a high level of uncertainty in these situations, some elements are recurring in disasters. The needs assessments, procurements and logistical planning largely followed (semi-)standardized processes for example. Moreover, for many decisions involved baseline information is available, for example the logistical capacity of a country to receive incoming goods. Furthermore, based on risk information, assessment can be made of areas that are likely to be affected by a disaster, the projected impact of such events and the assistance that may be required. Databases such as the Logical Capacity Assessment database of the LogCluster, or the INFORM risk index of the United Nation Development Program provide this important baseline information that can be used for pre-planning.

Objective

A large and continuously increasing number of data sources are available to humanitarian organizations that contain relevant information and data for assessing and planning. Systems like the Humanitarian Data Exchange, Open Street Map, Copernicus EMS, and many others present new opportunities to not only design logistical plans ahead of time, but also ingest real-time information when disasters strike. The challenge is to combine this data into meaningful models that can serve as a base for decision support systems. These models can build on baseline information such as logistical infrastructure coupled with risk profiles to design boilerplate response plans. When disaster strikes, these boilerplates can be filled with operational information (such as damaged infrastructure or needs assessments) and kick-start logistical planning for an individual organization or a joint response.

This challenge shows the trade-off between predefined process and agreements that are needed for an effective supply chain and the flexibility that is needed to deal with local circumstances, needs and capacities. In the humanitarian aid, there is a need to have pre-defined agreements and compatible processes and data-sharing that can be (quickly) adapted to a specific situation. The key objective of this challenge is to develop approaches and solutions that balance the trade-off between fully developed plans for response and the flexibility required to adapt to an unknown and uncertain situation.

Requirements

In order to accomplish this objective, there are several important considerations have to be made when developing solutions to address the above-mentioned solution and build on the possibilities of models to support rapid logistical planning in emergencies:

- Today, the knowledge and technologies exist to create models that allow for detailed analysis of situations and calculate a large number of various options to a specific situation. However, especially in sudden on-set emergencies, the time required to ‘instantiate’ models for specific situations should be carefully considered. Running models or using boilerplates for specific situations should be able to be used and run fairly quickly. It is important

- Models, boilerplate plans, and pre-planned responses can be developed partly ahead of time. However, disaster situations and emergency relief operations include a lot variable and aspects that can change or influence the plans. With the available information and considering the different options there is a risk of creating a large number of plans and options that have to be considered when a disaster occurs. To prevent an overload of information, plans and options the boilerplates or models should be balance their abstraction level with the operational detail required. For example, the models or plans may need to be able to include all operational details but provide sufficient detail and structure to be augmented with situation specific information.
- As with any tool, developing, maintaining and running these models requires specialized knowledge. This knowledge, expertise and capacities may not be available at all humanitarian organizations. Therefore, it is important to consider the end-user in designing specific solutions addressing this challenge. Systems, models and other tools should be designed that align with the capacities of the organization or should include additional capacity building measures (training) or alternate ways of providing these capacities (standby capacity). Moreover, it is important to consider the maintenance and updates required to keep these tools updated as new opportunities (technological advancements) arise, more data becomes available and situations (such as risk profiles) change.

Expected Outcomes

When successfully addressing this challenge, Dutch Humanitarian organizations, will be able to more quickly assess disaster situations and determine the specific options for delivering emergency relief items to a specific location. Such planning, evaluation and decision support systems reduce the time required for analysis while improving the accuracy through the inclusion of data from a wide range of sources.

Optionally, such models can also be linked to real-time information during response and mission, for example, visualize and monitor the operations. Even more, such models can serve as the base to develop systems that ingest a wide range of data-sources, for example from international databases with logistical information (such as transportation infrastructure) but can also ingest operational data from other partners in the Dutch Humanitarian community. Such systems in turn can support the decision-making process for different situations.

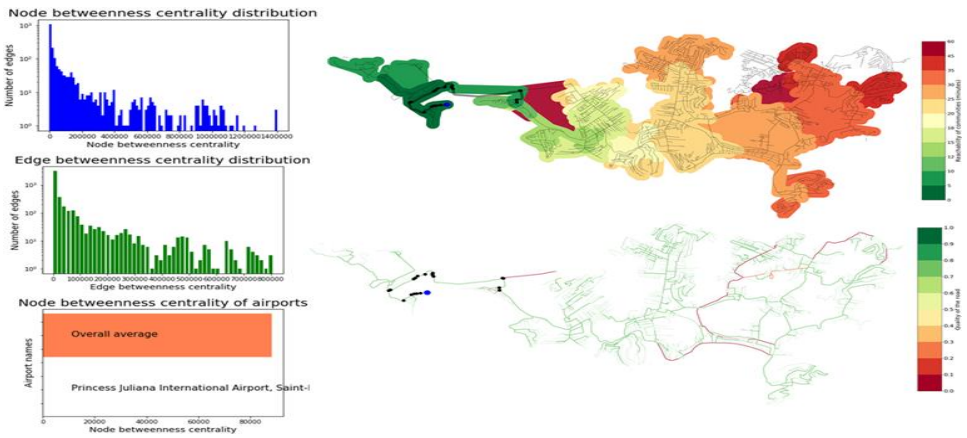

Figure 4. Example of model analyzing the reachability of St Maarten and the critical roads after hurricane Maria (Vincent Alkema, http://resolver.tudelft.nl/uuid:c1a546cc-e931-4fee-abfc-11145e677f70)

Additionally, boilerplates and models can be used to assess the logistical capabilities and potential bottlenecks for various scenarios. These (semi-)automated assessments can for example support organizations to identify key points for improving and strengthening the logistical capacities.

6.3 Challenge III: Local presence, partnerships, and networks

Introduction and Problem Outline

A key element in establishing effective and efficient logistical supply chains, especially in unknown and/or uncertain situations with rapidly changing circumstances, is the ability to set up, monitor and manage the entire supply chain. As supply chains increasingly span wider distances and even across the globe, this control is increasingly difficult to exercise. Linked with the increased global reach, more partners are involved in delivering items from producers to customers. Moreover, and in contrast with commercial supply chains, in the humanitarian and disaster response field supply chains are not always pre-established but implemented as situations unfold.

In order to effectively setup and manage supply (global) chains in these conditions the support of other partners is critical as only a limited number of humanitarian organizations have the necessary knowledge, capacities and capabilities to manage this in-house. Therefore, organizations need to rely on partnerships and networks. In the quick scan two specific elements that improve greatly due to these partnerships and networks. First, local presence provides not only an important control mechanism for last-mile distribution, but also can provide important situational awareness feeding information about the logistical capacity, key constraints and needs assessment information. Second, partnerships can also provide important supplementary logistical capacities

Objective

The objective of expanding networks and the local presence would be that the current supply chain and existing transport networks could be used to support the timely effective delivery during the critical response period. This can be accomplished by expanding the reach and network of the aid organizations. Specifically, by incorporating partners that have extensive global supply chain networks, by including partners that have a local presence, and enlisting partners with additional logistical capabilities or expertise.

The local presence of an organization and expanding the network is also one of the main challenges of timely effective delivery in the critical response period. This would contribute to building trust in a quick and efficient manner. In terms of local presence, it would be beneficial to connect with local present companies who already have a logistic network such as Heineken, Philips, Shell or Coca Cola. Host governments are important actors as they control assets such as warehouses or fuel depots. Host country logistics or regional service providers are another important set of actors that can either facilitate or constrain the operational effectiveness of humanitarian logistics operations. Extra-regional logistics service providers are also important in the supply process, e.g. DHL has contributed to the international relief efforts to deliver aid supplies to people and communities affected by the South Asia earthquake. Also connecting with the airports in the affected country could be of a great help; many materials and goods are transported via the airport to the country and therefore, this is important for effective delivery.

In terms of expanding the network, there are several actors that are relevant to create a relationship. Donors are important actors, as they provide the bulk of funding for major relief activities. In addition, to country specific funding (e.g. the USA and EU), in recent years, foundations, individual donors and the private sector have become important sources of funds for aid agencies. Other actors include the military, host governments and neighboring country governments, other non-governmental organizations (NGOs) and logistics service providers. The military has been on many occasions a very important actor as military personnel are called to aid. For example, the military brought communications, logistics and planning capabilities that were critical to Katrina relief operations.

Additionally, partners from the commercial sector, such as multi-nationals, international logistical operators, and consultancy firms can support and enhance the international reach and the logistical network of Dutch NGOs. The provided support can augment logistical capacities, knowledge gaps, and local access in the disaster response. However, precise, and joint request from humanitarian organizations is needed to establish such relationships.

Requirements
Strategies, approaches and tools that support humanitarian organizations in developing and implementing these opportunities, should support humanitarian organizations in different activities that take place before, during and after a humanitarian mission. Such as:

- Identifying, contacting and establishing contact with relevant partner organizations. The Netherlands specifically has many organizations (public and private) that have a global reach, including multi-nationals, logistical companies, universities and government institutions. In particular companies that have a local presence in high-risk countries (Heineken, Philips, Shell) or a strong relationship with foreign counterparts (universities, government agencies) that also have a presence in the Netherlands can be a great assets and information source. However, organizations may not be aware what information, knowledge or data is relevant for humanitarian organizations or missions. So additional awareness building, preparatory activities and trainings may be needed.
- Other organizations with a more operational logistical capacity can provide additional capacities. An example of a solution for the expanding of the network is that KLM arranged aid flights for the disaster on Sint Maarten, offering planes and transport capacity to deliver aid. Aside from the aviation sector, the Netherlands is home to several large logistical companies and other agencies (such as the Department of Defense) that can provide capacities, including shipping. Moreover, organizations can also provide relevant expertise to support the planning, implementation and monitoring of logistical support.
- Part of these activities can be done prior to emergencies especially with organizations present in the Netherlands. However, during emergencies and responses, it is important to build trust in a quick and efficient manner with partners, and specifically the staff of the partners that may be directly involved.
- During emergencies, requests for assistance to the partners should be clear, concise and well-informed. Organizations, especially during acute emergencies, have to make quick decisions on the assistance they can provide. The clearer a request is formulated, the easier it will be for partners to make these decisions or provide alternatives. For this is also important to understand what a partner can and cannot provide. In short, a tailored, specific request will have a higher chance of acceptance then a blanket request for support.
- Finally, a key consideration is the mutual benefit that involved partners in the network will gain. It is important for humanitarian organizations to also consider the benefits they can deliver to their partners, for example by providing their local knowledge, support communities critical to the commercial organizations, or share information during emergencies. Exploring the synergies, benefits and mutual gains is key to establishing lasting relationships.

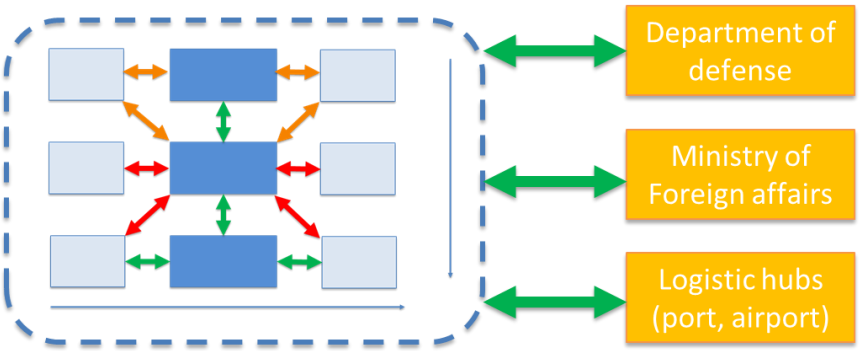

Figure 5. Example of the relationships when expanding the network

Expected Outcomes

The outcome of this challenge is centered around building, maintaining and leveraging partnerships and networks for humanitarian organizations to support in the rapid delivery of humanitarian aid. This support can be delivered in the forms of expedited assessments (of the humanitarian needs, logistical capacities or other relevant operational conditions), logistical capacity (such as transportation, warehousing, distribution) or coordination (expertise, alignment, synergy).

More specifically, this challenge would result a completer and more comprehensive network of organizations with logistical and international capabilities that can support humanitarian organizations in emergency responses and humanitarian missions. Such capacity could be shaped as a 'standby partnership', as for example UN organizations have established with companies such as DHL. Such partnerships would also be able to deliver mutual benefits outside active emergencies for example in knowledge exchange, capacity building, and synergies when operating in same geographical areas.

6.4 Challenge IV: Lean / Agile administrative processes

Introduction and Problem Outline

One of the key challenges that is identified in this quick scan is the need for more lean and agile administrative processes. Especially throughout the interviews, the administrative burden / overhead has been mentioned frequently. This overhead results from a variety of causes. First, organizations -in particular in the humanitarian sector- are financed by (often public) funds or donations. This requires from the humanitarian organizations to be accountable and transparent on the use of the budget. Moreover, because these funds often come with specific constraints or are earmarked. During missions the organizations has to be able to track the administration (finances, logistics, impact) to ensure that all donor obligations can be fulfilled and correctly reported on. Second, the reality in the field and the 'administrative' reality do not always align and require flexible or creative ways of ensuring that both the administration is done correctly, but humanitarian operations can be conducted effectively.

Objective

In this challenge, the objective is to identify methods, approaches and tools that enable organizations to establish more effective administrative processes before, during and after disasters and responses to them. These leaner administrative processes have to be balanced with the requirements put forward by donors, legal frameworks, guidelines and internal policies. In other words, balancing accountability and transparency requirements with flexibility and lean processes. The challenge would not be per se addressing the requirements but rather focusing on two other aspects: finding a balance and reducing the administrative workload.

For both aspects a thorough understanding of the existing processes is needed, for example through a process mapping exercise. Such mapping enables an understanding of which processes are linked (and thus could be integrated), the dependencies (which for example can cause cascading delays) and which are redundant. Additionally, the resulting mapping can help to identify common data-needs between different processes. For example, data-collection processes for the purpose of evaluation could be more linked to decision-making processes, progress monitoring, or accountability. For example, data collection could be a shared process that delivers input for a range of other processes. Another example would be to integrate administrative tasks into more recurring operational processes, reducing the task load and redundancy. Eventually a similar exercise could be conducted on an intra-organizational level, examining the various (decision-making, planning and operational) processes between different humanitarian organizations as outlined in Challenge I as well.

Finally -and akin to the other challenges- humanitarian organizations can look at similar challenges addressed in private and commercial organizations. In the field of operations management many approaches, tools and best practices have been developed that could be adopted to the humanitarian context. Specifically approaches for process mapping and (critical) evaluation, smart process management (for example data integration), and the use of (information and communication) technology to reduce administrative overhead.

Figure 6. Business Process Management Factors

Requirements

The combined requirements from donors, legal (from the sending and receiving country), and international guidelines often present results in complicated administrative requirements for organizations.

Nevertheless, these guidelines often exist with reason and/or have evolved over time. Therefore, it is important to not primary focus on changing these external factors (as this would take significant time and effort) but mainly consider adaptions in the *implementation* of these requirements, i.e. the administrative processes. It is important to consider the following:

- The time-pressure that is present during acute emergencies. Meaning that processes, tools and other elements should be able to be put in place rather quickly. In contrast with private or commercial organizations, the lead-time for implementing processes is limited (or rather the lead-time to instantiate for specific responses and operations) requiring organizations to implement processes almost immediately, with less time for designing and adapting these to specific and/or local circumstances.
- Likewise, the flexibility required in the field by field workers to adapt to unknown and (rapidly) evolving situations. In the research it has shown that administrative and field reality do not always align and require a certain flexibility and room to be adapted. This is in contrast with some aspects of lean business processes which require clear, fixed and controllable processes. Any solution should therefore allow a certain bandwidth to be adopted to the local circumstances.
- The required skills and competences to effectively design, implement, and monitor administrative processes. Especially when using technologies and other tools to support field operations, additionally capacities and resources may be required to ensure that these are reliable and fully utilized. This could for example be addressed by additional training, collaboration with specialized partners and other (development/training) activities outside of an active emergency or response.
- The design of new processes, support by new technologies, would need be beneficial to different involved stakeholders. First and foremost, they would support the field office and workers by better alignment with the operational reality and their primary objectives (delivery aid) rather than ensuring a correct administration or full accountability (donor requirement). Second, they need to support the humanitarian organization itself, such as the administration at headquarters, but also reporting and advocacy (impact evaluations). Finally, the process need to address (a wide range of) donor specific requirements.

Expected Outcomes

In addressing this challenge, humanitarian organizations would reduce the administrative overhead during emergency operations through several options. Such as a reduction or more efficient use of the various processes by aligning them, avoiding duplication and creating synergy. Furthermore, technological advancements provide options for easier, quicker and more agile data collection, processing and sharing. Integrating these technologies in the process -while keeping the field conditions in mind- would help to overcome the gap between the donor requirements for administration (accountability, impact measurement, monitoring, etc.) on the one hand, and the capacities, field conditions and operational needs on the other hand. For example, technology can support the easier collect data during the operations (e.g. aid delivery) and transform this into information addressing the donor needs automatically.

On a personal level, a successful solution to this challenge would also empower staff of humanitarian organizations and increase their ‘job satisfaction’, by reduced administrative tasks as indicated in the interviews. When this challenge is successfully addressed, the outcomes would also provide several benefits for humanitarian organizations. Among others, the administrative overhead -especially in the field- would be reduced, for example by less time spend or a shorter turn-around time for the administration of specific missions. Furthermore, these integrated processes would enable better informed decision-making through more rapid delivery of information, for example on the impact (near real-time monitoring and evaluation) or continuous revision of the needs (assessment).

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Appendix A: Interview Protocol

Duration of interview: around 60 minutes - check if interviewees have time, if not focus on priority questions.

Objective:

- The objective of the interview it gets an insight into the barriers, challenges and opportunities for delivering aid during sudden onset humanitarian crisis.
- We examine two perspectives and the interaction between them, by looking at the various stages in the delivery of humanitarian aid.
  - o From headquarters (remote): coordination with other agencies, procurement of goods and interaction with the field staff.
  - o From the field (on-site): the formulation of the needs (assessment and formulating request), the interaction with HQ and the distribution of goods received.
- Creating timelines for these two perspectives will help to identify potential opportunities to improve the timely delivery of aid. These could for example be barriers or challenges at the HQ level, the field level or the interaction between them or other actors.

Scope, Focus & Sample

- We focus specifically on delivering aid in the immediate response stage, such as humanitarian supplies for food & water, medical supplies or emergency shelter. This is up to roughly 1 week.
- The (initial) scope is sudden-onset natural disasters, specifically Nepal 2015 Earthquake and the typhoon Yolanda (Haiyan) in the Philippines in 2013.
- We aim to interview staff members who have been involved in these disasters during the initial period and were involved in the delivery of emergency aid. Either as field or HQ staff. The exact role and responsibilities can vary between organizations and deployments. Some examples roles are desk officer, logistics or procurement officer, head of mission or mission coordinator, liaison officer.

Expected outcomes

- The expected outcome of the interview is an improved understanding of the processes involved in humanitarian logistics. Specifically, the challenges and barriers faced in getting the right supplies, to the right people in a timely manner.
- In other words, what enables or inhibits this objective from the perspective of the interviewee.
- In addition, we are looking at the opinion of the interviewee on how these challenges can be overcome or what opportunities for improvement exist.

Important notes for conducting the interview

- The following interview protocol does not have to be strictly followed in this order, rather these are points that should/could be discussed. The order can change depending on the natural flow of the conversation, however the introduction (Part 1) and conclusion (Part V) should always be at the start and end respectively.
- Try to record the interview, for example on a mobile phone, or use an MP3 recorder for Skype if conducting the interview online
- Make sure the interviewee provides his or her consent, prior to starting (and recording) the interview

ID	*Topic*	*Info / Description*	*Prio*
Part I: Introduction (5 min) *Getting to know each other and manage mutual expectations. Inform about the purpose of the interview and the use of the results. Ask for consent to record/process the interview and use the results in the project.*			
1.1	Introduce project	**(NB! Do not insinuate that we have a solution!)** ● Goal of project is to identify challenges & barriers for hum logistics ● Briefly introduce yourself (what you do in the project, where you work)	▲
1.2	Motivation for interview	● Explain the interview will take around approx. 1 hour ● The interview will be not a Q&A session, but rather more conversation style. ● We want to ○ Understand the process, stakeholders, and ○ Learn about specific challenges you personally faced in your role. ○ Your opinion on what should be improved.	▲
1.3	Expectations management	● The goal is to draw from the experience of the interviewee ● If desired, we will keep you informed and recognize you in the project ● Depending on involvement and interest, access to results	▼
1.4	Consent	● Consent form ● Ask for permission to record/process -> start recording ● For quotes: in general, they will be anonymous and not traceable. ● If we use specific quotes, we will ask permission before publishing.	▲ ▲
Part II: Biographical info (5 min) *Info about the interviewee, their organizations and their deployment(s). Includes their history, motivation, objectives and organizational structures.*			
2.1	Interviewee	● Biographic information ● What organization do you work for, what is their mandate & objective? ● What is your role and responsibility in the organization? ● In what responses have you participated, and in what role?	▲ ▲
2.3	Establishing rapport	● Where were you on the day of the disaster? ● When did you first learn about the disaster?	▼
Part III: Activation (10 min) *Describe the timeline of the initial activation period, including the disaster event, the activation and the deployment to the field.*			
3.0	**Prompts**	● **Can you take us through the day of the disaster?**	
3.1	Activation	● How/when did you and your organization first learn about the disaster? ● How/when did you and your organization reach a decision to act? ● Upon activation, what were the decisions did you have to make? ● What is the timeline for this initial stage?	▲ ▲
3.2	Role / Responsibility	● What role and responsibility did you personally have in this initial stage? ● What actions did you take in the initial stage? Based on what information? ● Did you deviate from standard procedures / mandate?	▲
3.3	Coordination / Information	● With what people / organizations did you work closely together initially? ● At which stage do you get useful/sufficient information about the situation? ● What information did you look for and use to determine what was going on?	▲
3.4	Feedback	● Is the actual process fully registered for evaluation afterwards? ● Can future programming be improved by the actual process reporting? ● Is feedback on the actual process collected?	▼

Adopt the questions below to the role of the interviewee (HQ / Field)			
Part IV: Request for aid (10 min) *How did you determine what aid was needed and how were these communicated? How this request received and addressed by your organization?*			
4.0	**Prompts**	• **What activities did you undertake after the** *activation***?** • **How did you learn about the (immediate) needs of the affected population?** • **How / when did you decide on what actions to undertake?**	
4.1	Information collection & management	• How did you identify what the needs were and how did you prioritize them? • What information sources did you use? Which one proved most valuable? • How did you transform these needs into a request? • Who manages information received? Is it centralized?	▲ ▲
4.2	Communication	• To whom did you communicate those needs? • Were there frequent changes in the needs and how did you communicate with them? • What hampered/facilitated communication with HQ or Field? • How did communication of needs happen? (ex. Unstructured data/standardized way)	▲
4.3	Coordination with HQ	• Which were the key figures that managed the coordination on the field or HQ? • What are the most difficult steps in this coordination?	▼
4.4	Coordination with other NGOs	• Which kind of resources are the most important to be shared and in which occasions? • How were hierarchies established?	
Part V: Aid delivery (10 min) *Looking back what information would it have been helpful for you to have had during the crisis?*			
5.0	**Prompts**		
5.1	Information collection & management		▲
5.2	Distribution	• What are the main challenges in delivering the aid to the affected people?	▲ ▲
5.3	Communication	• What hampered/facilitated communication with people on the field? • How did you organize data received? • Which analysis did you perform on data collected?	▼
5.4	Coordination with people on the field	• Which were the key figures that managed the coordination in the HQ? • Were you ever repurposed and deployed to support regional offices? • What support is most needed in coordinating the delivery of resources? • What are the most difficult steps in this coordination?	▲ ▲
5.5	Coordination with other NGOs	• Which areas of coordination are the most beneficial or difficult to establish? • Which kind of data are the most important to be shared? • How were conflicts solved if any?	

Part VI: Impact of aid (10 min)

What was the impact of your work, the aid delivered by your organization. What contributed to the level of impact?

6.0	**Prompts**		
6.1	Adaptiveness	• How quickly could you respond to changes originating from outside your organization? • How often / frequent	▲
6.2	If / how was it used	• Was the aid delivery according to expectation? • Was there duplication in the aid delivery? How could it have been exploited? • To what extent were the needs of the affected population addressed according to you?	▲ ▲
6.3	Alignment	• If/how was there coordination with other areas with similar needs? • Which areas of coordination are the most beneficial/most difficult to establish?	▲
6.4	Reporting	• Were the results / impact reported back? • Was the reporting realistic / accurate according to you? • Was the reporting useful to improve future programming?	▼

Part VII: Closing (10 min)

Closing of the interview by summarizing some key findings and elicit some more personal opinions about the ideal tools to address needs, and relevant trends and developments that will provide opportunities for future developments.

7.1	Review	• In hindsight, what do you think were the biggest logistical challenges? For example: ○ Political, Organizational, Local circumstances, Physical, Infrastructure, etc. • What factors would make more timely aid delivery possible? • In your role, what factors inhibit an efficient delivery of aid?	▲ ▲
7.2	Learning	• Are there standard procedures? Are they being used and how useful are they? • Are there lessons learned identified? With whom are they shared?	▼
7.3	Follow-up	• Are there any documents or reports you think are valuable for us to review? • Are there any other people we should talk to you according to you? • Any last comments or questions you want to leave us with?	▲
7.4	Sign off	• Thank you for the interview • Review the consent and explain what is going to happen next (see above) • Leave contact information in case there are follow-up questions	▲ ▲