A proposal of Reverse Logistics
applied in Humanitarian Relief
Actions
Donations Identification and Reallocation – A Humanitarian Logistics View

Master’s Thesis within International Logistics and Supply Chain Management

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Summary

The application of innovative methods to diminish the amount of human creation called “waste” should be applied not only under commercial terms, but also under the humanitarian concept.

Negative results of focusing only on the fastest relief of human suffer without attending the consequences of the flow of items left on the disaster zones, could bring in the medium term, critical environmental consequences, due to the creation of new waste.

This research analyzes relevant approaches of the Humanitarian Relief of Aid under a Humanitarian Logistics point of view. It aims to find if those approaches have already a Reverse Logistic phase of the items provided by donors. The results demonstrate the absence of a Reverse Logistics Phase for items brought to disaster zones. Thus, some proposals were suggested for a new Reverse Logistic Phase in any humanitarian relief of aid.

NGOs, donors participation, coordination among players on the scene, managing inventories, last mile distribution, performance measurement, relief of aid models, and reverse logistics concepts applied to the humanitarian field would be only some of the themes revised on this research. These aim to enrich the readers’ knowledge on the topic as well as to provide an open panorama of the humanitarian actions employed in each Natural Disaster. The reader would acquire sufficient understanding to determine how feasible and reachable are the alternatives proposed by the authors.

The relevance of this theme reveals a critical and not yet researched niche in Reverse Logistics under Humanitarian Logistics. It encourages more readers to research on it, explore and apply in future natural disasters. This research used a qualitative approach employing a semi-structured interview made to small and large humanitarian organizations.
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1. Introduction

1.1 Background and Problem

Nowadays, due to the international logistics support, it is easy to find almost any international product or service in any part of the planet. Products and services are fragmented into small pieces, making of the manufacturing process's costs, cheaper to produce and ensemble overseas. Logistics Parties are therefore increasing as “service companies”, which bring to national companies the opportunity to expand into worldwide markets.

This growing and trendy situation has made of International Logistics a business zone known by its Profit-Oriented impact into companies that perform it. However, International Logistics does not aim merely as a commercial subject. There are particular and distinctive conditions where international logistics could be worthwhile in a humanitarian manner. For instance, Non-Profit oriented organizations.

While some Profit Oriented companies deal with several processes to transfer merchandise from one side to another, some other Non-Profit Organizations deal with additional non-expected circumstances and dangerous conditions where international logistics generate the difference between the wellbeing or the fatality of hundreds of human beings.

This notion is applied under Humanitarian Logistics which is defined as follows “Humanitarian relief chain means to rapidly provide appropriate emergency supplies to people affected by natural and man-made disasters so as to minimize human suffering and death” (Balcik, Beamon & Smilowitz, 2008, p.51)

Natural disasters and man-made conflicts can illustrate the humanitarian field. Both cases lack a relief process to follow step by step, since every disaster or man-made conflict differs from one another. However, a general model could be described for any of those two situations. For instance, a model explained by Safran (2003) describes a strategic approach for disaster and emergency assistance.

Under Safran's cycle proposal, the description of three important phases is given such as: the Transition phase, the Recovery stage and the Prevention period. This model would be further described under the Humanitarian Logistics division of this research.

Some other authors enlighten diverse models. For instance, Balcik et al. (2008) analyzed and modified the structure of the relief chain proposed by the UNDP Disaster Management Training Programme. Under this model the process of the relief of aid in any natural or man-made disaster is explained in four stages: The primary hub, the secondary hub, the tertiary hub, and finally they add a phase named Last Mile Distribution, which as it would be clarified further on this research, plays an important role on the final access to end beneficiaries. This model and concept would also be explained along the development of this thesis.
The remarkable part of the models analyzed under this research, is that they show almost non-involvement in the use of Reverse Logistics once the relief of aid has been given.

It is understood that under the humanitarian segment, the main concern focuses on bringing relief to any human being (beneficiary) in danger as a priority. Once this objective is accomplished, there is scarcity on the information about the following phase: Reverse Logistics, which actually, was not found in any of the selected models for this research. This opens up an opportunity to develop deeper into this topic.

The authors of this investigation found this niche a significant one to foster as one of the purposes of this investigation. Thus, the models, previous studies and interviews presented during the development of this research are considered as a base for the proposal of a Reverse Logistics Phase to follow in Humanitarian Relief Actions.

Likewise, another opportunity area for the development of this research was found during the collect of in-kinds when they arrive to the disaster zones. Some of them creating an oversupply of no needed items, obstructing the already affected distribution channels and creating useless bottlenecks from the beginning of the humanitarian relief.

It is not yet possible to forecast any natural or man-made disaster in an accurate and precise time. Worldwide donations support cannot yet being predicted in exact numbers. Therefore, delivery of goods cannot be scrupulously estimated, since the disaster zone’s remaining transport infrastructure varies from case to case. Consequently, ports of entrance to the disaster zones are key factors for the success of the relief of aid to end beneficiaries, and here is where another opportunity is open up for the authors of this thesis.

Frequently, worldwide massive participation is found when the disaster zone is produced by a very stunning situation and when a Request for International Support is given by the country affected. The issues arise when massive in-kind products become oversupply. Moreover, this inflated amount of supply is brought with a mix of solicited and unsolicited goods, some of them with a short or even passed expiration date, worsening the logistics control of indispensable solicited goods at the ports of entrance.

“Humanitarian organizations are often inundated with unsolicited donations which can cause bottlenecks in the supply chain as much-needed resources, including personnel and transportation, are sacrificed to sort through and transport the supplies” (Wassenhove, 2006, p. 477)

Summarizing this last point, the oversupply of goods create a waste in time and money investment. Unloading useless products with a short or even passed expiration date, turn the human logistics relief of aid to be seen as a waste of time, effort and investment.
Under the author’s point of view, this surplus of unwanted products should not be seen nor treated as a waste. Once the product has been already transported to the conflict zone, much profitable uses could be given to them than to incinerate them.

On the Profit Oriented Organizations, there are some consumption methods that decrease the oversupply making a reduction of the total company’s costs by employing Just In Time, short temporary storage, or different lean production methods. Furthermore, some companies invest in Green Logistics cycle, such as reuse, recycle or refurbish. Unfortunately, that is not the case for Humanitarian Logistics where the oversupply of products sent by donors is aimed to support exclusively one specific humanitarian action relief. Once these products become unnecessary by the disaster event, the only left possibility is the incineration of them.

This last mentioned practice is an opportunity for the authors of this investigation that deserves a more detailed research, which would be covered by providing and analyzing some Reverse Logistics alternatives applied under the humanitarian logistics point of view. Therefore, the efficiency and effective handling of remaining supplies in relief aid is therefore a significant theme of this research. Alternatives would be presented and selected for a certain pattern of disaster.

As the reader follows this research, differences between Profit Oriented organizations and Non Profit Organizations would be clarified. For instance, demand, warehouses, distribution channels, funds, IT systems, supply of goods and the actors involved in the whole humanitarian logistics process, differ from international commercial logistics. These differences would be described to broaden reader’s expectance of the chosen topic.

1.2 Purpose

To determine up to what extent Humanitarian Organizations have applied a Reverse Logistics phase of the items donated by humanitarian organizations.

The authors of this thesis aim to research if there is a follow up made by international agencies on the items donated in natural disasters, once these items have fulfilled their role.

Our hypothesis is that if there is an absence of follow up on the donated items, then negative environmental consequences could be faced by the world in the medium and long term.

The expectation of this study is to provide ideas of how to apply a Reverse Logistic way to avoid negative environmental consequences.
1.3 Research Questions

The Research Questions to analyze under this investigation are the next ones:

1. Does it exist - on the Humanitarian Relief of Aid Cycles – a Reverse Logistics phase? Has it been already applied? And if so, how does it work?

2. Which alternatives could be proposed to be followed for the Reallocation of Items - Reverse Logistics?

1.4 Discussion Topic

The Discussion Topic would be based on how critical is to add a Reverse Logistics Process in all reliefs of aid. The reader would be able to find arguments to debate the importance of applying it. Keywords such as the creation of “new” waste, environmental hazard, human wellness disturbances, importance of logisticians and how could they spread a Reverse Logistics knowledge in the field, information on how to apply it, NGOs participation for achieving the goal, among others themes could be also employed for further discussion.

1.5 Relevance of this Research

The Relevance of this thesis is precisely the chosen theme. Up to date the authors of this thesis could not find any secondary data of Reverse Logistics in Humanitarian Relief of Aid of items given by donors, meaning that this research could perhaps become the start of some other investigations to increase the knowledge on this topic.

This lack of existing information on the topic highlights a critical need of a reverse flow of items in each relief of aid. The absence of a reverse phase in any natural or man-made disaster cycle, does not oversee the long term environmental damage to those in danger situations as well as to the rest human beings on earth.

1.6 Delimitations

Existing information about Reverse Logistics in Natural or Man Made Disasters was not available. Analyzing Man Made disasters such as wars, political conflicts, terrorist attacks among others, would be more challenging to examine due to the difficulties this topic presents. Therefore, the focus of this thesis and the alternatives proposed for a Reverse Logistic Phase would be based only under Natural Disasters.

Development activities would be the focus of this research.
2 Frame of References

2.1 Defining Commercial Logistics Concept

For a better understanding of this thesis, a brief definition of the commercial logistics concept would be given. However, a major focus would be given to the Humanitarian Logistics as it is the main topic of this research.

According to Langley (2009), Logistics is the process of anticipating customer needs and wants by acquiring the capital, people, technology, information and materials, needed to fulfill these needs, optimizing the goods/services, producing networks in order to fulfill in a timely manner customer requests.

Logistics and Supply Chain Management are always linked. Therefore, the definition of this last term is also written ahead.

Supply Chain Management is the art and science of integrating the flow of products, services and information into the supply pipeline from the suppliers's supplier to the customers' customer (Langley, 2009).

The logistics subdivisions are: Business, Military, Event and Service. They all bring value added in Form, Place, Time, Quantity, Quality and Possession.

Logistics activities are responsible of transporting, warehousing and storage, order fulfillment, demand forecast, inventory control, customer service, material handling, production planning and schedule, procurement.

There are seven R’s known under the logistics field: Right Time, Right Place, Right Quantity, Right Quality, Right Cost of Transportation, Right Cost of Product and Right information.

2.2 Defining Humanitarian Logistics Concept

2.2.1 The pure concept of Humanitarian Aid and Humanitarian Logistics

There are different Logistics definitions depending on the focus given to it. Logistics have a wide spectrum that covers military actions, non-profit and for-profit firms, humanitarian associations as well as reverse logistics applied to all types of organizations. This thesis would be working under the Humanitarian point of view focusing as well on the reverse flow of supplies. Therefore, in order to define the Humanitarian Logistic concept, it would be first recommended to understand the meaning of Humanitarian Aid.

Five definitions are written under this research to understand different points of view given by diverse organizations (Global Humanitarian Assistance, 2010).
Good Humanitarian Donorship (GHD) "The definition of humanitarian assistance agreed in Stockholm in 2003 reaffirmed the distinctive purpose and principles of humanitarian action. The purpose of humanitarian assistance is to save lives, alleviate suffering and maintain human dignity. For donors signing up to GHD principles, their humanitarian assistance must be allocated on the basis of need and without discrimination (impartial). It must not favour any side in a political dispute (neutral). Humanitarian objectives are autonomous from political, economic or other objectives (independent). 36 donors are now signed up to the principles"

Development Assistance Committee (DAC) "In line with the GHD definition, and within the overall context of Official Development Assistance (ODA, or ‘aid’), the DAC defines humanitarian aid as the assistance designed to save lives, alleviate suffering and maintain and protect human dignity during and in the aftermath of emergencies. To be classified as humanitarian, aid should be consistent with the humanitarian principles of humanity, impartiality, neutrality and independence"

United Nations "Humanitarian assistance must be provided in accordance with the Humanitarian Principles namely: Humanity: Human suffering must be addressed wherever it is found, with particular attention to the most vulnerable in the population, such as children, women and the elderly. The dignity and rights of all victims must be respected and protected. Neutrality: Humanitarian assistance must be provided without engaging in hostilities or taking sides in controversies of a political, religious or ideological nature. Impartiality: Humanitarian assistance must be provided without discriminating as to ethnic origin, gender, nationality, political opinions, race or religion. Relief of the suffering must be guided solely by needs and priority must be given to the most urgent cases of distress. Adherence to these principles reflects a measure of accountability of the humanitarian community." UN General Assembly resolution 46/182, 1991. Since 1991, various legislative decisions have been made in order to recognize a changed humanitarian environment – internal displacement, access, protection, safety and security of humanitarian personnel, humanitarian-military relations, and the frequency and magnitude of natural disasters.

Forum on Early Warning and Early Response (FEWER) "The range of activities designed to reduce human suffering in emergency situations, especially when local authorities are unable or unwilling to provide relief. Actions include: the provision of food, shelter, clothing, medication through organized facilities; evacuating the innocent and vulnerable from conflict or emergency zones; restoring basic amenities (water, sewage, power supplies);and burying remains"

UN High Commissioner for Refugees (UNHCR) "Aid that addresses the immediate needs of individuals affected by crises and is provided mainly by non-governmental and international organizations"
Once the Humanitarian Aid has been explained by five worldwide organizations, the definition of Humanitarian Logistics should be also determined. Different authors in diverse articles and researches have provided certain definitions. Next, some of the ones that encompasses a comprehensive meaning of the chosen topic.

Thomas and Mizushima (2005, p.2) define it as “the process of planning, implementing and controlling the efficient, cost-effective flow of and storage of goods and materials as well as related information, from point of origin to point of consumption for the purpose of meeting the end beneficiary’s requirements”

“The purpose of humanitarian relief chain is to rapidly provide the appropriate emergency supplies to people affected by natural and man-made disasters so as to minimize human suffering and death” (Balcić & Beamon, 2008, p. 51).

Thomas (2004) defines it as “the process of planning, implementing and controlling the efficient, cost effective flow and storage of goods and materials as well as related information from the point of origin to the point of consumption for the purpose of alleviating the suffering of vulnerable people”. The function encompasses a range of activities, including preparedness, planning, procurement, transport, warehousing, tracking and tracing, customs and clearance.

The humanitarian logistics definition given by Thomas (2007) refers to “the processes and systems involved in mobilizing people, resources, skills, and knowledge to help vulnerable people affected by natural disasters and complex emergencies. It encompasses a range of activities, including procurement, transport, tracking and tracing, customs clearance, local transportation, warehousing and last mile delivery”

*Figure 2.1 The Supply Chain for Humanitarian Relief. Thomas (2007)*

Taking an abstract of the Humanitarian Nordic Course provided in Helsinki, Finland at the Hanken University in 2010, the Humanitarian Logistic Institute as well as the worldwide organizations studied under this research (GHD, DAC, UN, FEWER, UNHCR) agreed with three relevant concepts related to humanitarian logistics named: Humanity, Neutrality and Impartiality. Therefore, Humanitarian Aid as well as Humanitarian Logistics are assumed to act, behave and perform under these three principles. These ones are shown under the Humanitarian Logistic Institute course sourced by Tomasini and Wassenhove (2009), which are also shown in Figure 2 ahead. (cited in Wassenhove, 2006).
Figure 2.2 The Humanitarian Space. Tomasini and Wassenhove (2009)

Humanity refers to the relief of human suffering wherever this one is found. Neutrality means that relief shall be given without any affiliation to any part in conflict and Impartiality indicates the objectivity to help those in need as well as the disinterest to provide them relief when needed.

2.2.2 Humanitarian Logistics: Scope and Importance

Logistics is a fundamental part for the quick response in any relief of aid. According to Thomas (2007), she founds three relevant levels of importance:

- Logistics operate as a link between two areas that need to work together. This is the case between the disaster preparedness linked with the quick response, they also connect the procurement flow with the distribution of the selected items. Finally, logistics also connect the headquarters with the resources on field.

- Logistics are essential for an effective, efficient and positive response. Right items, sent to the right beneficiaries at the right time. Water, food, shelter, health and sanitation items are covered thanks to the logistics functions.

- The information kept by logisticians over the track of items sent to the disasters zones, becomes a very useful tool to be used during the conflict as well as in future worldwide disasters. It becomes an enormous source of information, which is called by the mentioned author as a post-event learning process. As Thomas A.S. explains, this data reflects all aspects of execution, from the effectiveness of suppliers and transportation providers, to the cost and timeliness of response, to the appropriateness of donated goods and the management of information.

The scope of humanitarian logistics covers exactly the same range as a For-Profit organization. Figure 1 shows the chain followed on Humanitarian Logistics. Perhaps, the difference between a For-Profit and a Non-Profit organization could
be that the second one does not start the process from the transformation of the raw material, since the items sent by donors have already been processed.

2.2.3 Explaining Disasters

The humanitarian logistics cycle start right after the international call is made by the country in sight. To understand this process it would be important to determine what a disaster is and the consequences carried by it. Three explanations given by three different authors would be explained, as well as three similar models presented and studied by them.

"A disruption that physically affects a system as a whole and threatens its priorities and goals" (Wassenhove, 2006). Wassenhove (2006) explains two types of disasters: Natural or Man-Made. On one side, natural disasters embrace either slow-onset situations such as famine, drought and poverty or sudden-onset, which refers to unexpected disaster caused by the nature such as earthquakes, hurricanes and tornadoes.

On the other side, man-made disasters comprehend political and refugee crisis as a slow-onset or Terrorist Attack, Coup d'Etat and chemical leak as a sudden-onset.

<table>
<thead>
<tr>
<th></th>
<th>Natural</th>
<th>Man-made</th>
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<tbody>
<tr>
<td>Sudden-Onset</td>
<td>Earthquake, Hurricane, Tornadoes</td>
<td>Terrorist Attack, Couped’Etat, Chemical Leak</td>
</tr>
<tr>
<td>Slow-Onset</td>
<td>Famine, Drought, Poverty</td>
<td>Political Crisis, Refugee Crisis</td>
</tr>
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Figure 2.3. Explaining Disasters. Wassenhove (2006)

These two types of disasters bring several consequences to either national or international economies. Moreover, they produce severe impacts into the sustainable development of the country in danger.

As Whybarck (2007) explains “a disaster relief arises from some misfortune that deprives a group of people of their food, housing, livelihood, and other means of sustaining themselves” Whybark (2007) divides these two categories in Natural and Political/Economic disasters.
Disasters

<table>
<thead>
<tr>
<th>Natural</th>
<th>Political/Economical</th>
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<tr>
<td>Volcanic Eruptions, Wild Fires, Floods, Earthquakes, Epidemics and Famine as well as other disturbances to the natural environment</td>
<td>When people displaced by War, Genocide, Political insurrection or Other Failures of Government</td>
</tr>
<tr>
<td>Famine could be also a consequence of a long-term human activity</td>
<td>Displacements leads to large populations forced from their homes and even their countries</td>
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Figure 2.4. Explaining Disasters. Whybark (2007)

He also illustrates some examples of how those natural and political disasters have assaulted in different parts of the world. Floods in Bangladesh, Central America, China, India; Earthquakes in China, Iran, Turkey and recently in Japan; Volcanic Eruptions as in Philippines and United States; Tsunamis like in Malaysia, Indonesia, Thailand and again recently Japan; Famine like in Ethiopia, Somalia and Sudan; Forest fires as in Malaysia and United States; and Political Displacements such as the ones found in Bosnia, Liberia, Rwanda, Sierra Leone, and Sudan.

(Khan, Vasilescu & Kahn, 2008) presented a third studied model. They define a disaster as “when hazard, vulnerability and insufficient measures to avoid risk collide”
Hazard and Vulnerability are also defined by Kahn et al. (2008) “Hazard is “a dangerous condition or event that threatens or has the potential of causing injury to life or damage the property or the environment”. They also divide these hazards into two groups: Natural ones and Man-Made. These last ones caused due to human negligence.

Vulnerability is “the extent to which a community, structure, services or geographic area is likely to be damaged or disrupted by the impact of particular hazard, on account of their nature, construction and proximity to hazardous terrains or a disaster prone area” (Kahn et al. 2008). They also clarify two types of vulnerabilities: Physical refers to damaged material structures; and Socio-economical refers to the damage made to certain social groups under low economical circumstances which condition complicates the way for them to cope with the disaster consequences (Kahn et al. 2008).

There are several types of hazards caused either by the nature or by human negligence. In the next table, sourced by the Central Board of Education, a classification is given for different kind of hazards.
According to Caballero and Zapata (1995, p. 11)), “these impacts are particularly relevant in the countries of Latin America and the Caribbean, which frequently experience natural disasters of various origin and intensity, with the sequel of human lives lost and grave economic and social impact”

To clarify this last concept, the next figure reveals the risks hotspots in the world, making of developing countries a focus of potential humanitarian relief as shown next.
2.2.4 Supply Chain Structure under Disaster Management Cycles and Theoretical Models

Different models have been developed for a logistics relief of aid in different natural disasters. The one employed by Balcik et al. (2008) Research and taken from The Disaster Management Training Programme, explains a general process from the beginning of the international call up to the delivery of the supplies to the last beneficiary.

![Diagram of relief chain structure](image)

**Figure 2.8 UNDP (2008). Structure of the relief chain. Cited in Balcik et al. (2008)**

First, it is found a primary hub (seaports, airports). Secondly, the arrived supplies are taken into a second hub (selected warehouses according to the remaining infrastructure disaster). Thirdly, they are transferred to tertiary hubs LCDs (Local and Temporary Distribution Centers). Finally, LCD made the final delivery to end beneficiaries.

As for the Humanitarian Aid, some cycles have been developed to explain the stages followed in any natural or man-made disaster. In general, and after analyzing diverse models from different researchers, five phases are commonly faced. Response, Recovery, Mitigation and Preparedness. It is also referred as the four R’s: Response, Recovery, Readiness and Reduce. The disaster management cycle by Seychelles (2010), summarizes these mentioned steps.
Once a *Disaster Event* strikes, damages are seen in different zones. Immediate *Response* begins then by the local government, organizations and general community - national and international. This last one only under an international called made by the country in danger. The purpose would be to afford basic requirements for the people in threat until enduring and sustainable solutions are found. This stage then would develop into a *Recovery phase*, once the disaster zone is under control. The recovery phase aims to restore beneficiaries’ lives as well as all the structure that supports them. Consequently, a *Mitigation stage* would intend to reduce the effects of a new disaster occurrence by informing society of plans and public policies to follow for future disasters. Some of the mitigation measures include: building codes, vulnerability analyses updates, zoning and land use management, building use regulations and safety codes, preventive health care and public education. Finally, the *Preparedness Phase* would aim to maintain the society well informed of how to respond to any emergency future catastrophe. It involves response mechanisms as rehearsals, developing long and short-term strategies, public education and building early warning systems (Warfield).

At last, Safran (2003) details a disaster and emergency model (cited in G. Kovacks, personal communication, 2010) was selected to be studied under this thesis, due to the extensiveness that it represents. It displays a strategic approach cycle for disaster and emergency assistance. It includes in a broader way the stages developed by other researchers, but in just one approach.
The Disaster Management Cycle provides an outlook from the moment the disaster strikes into the affected country passing up for a transition, recovery and prevention phases.

This model is represented as a cycle, which attains to provide at the end of any natural disaster a development and preparedness stage for future disasters. However, as this approach encompasses most of the disasters cycles studied by diverse researchers in different investigations, after analyzing each stage, the authors of this thesis suggest an extra cycle that could be added into the presented model in order to make it more complete. This suggested phase would only strengthen Safran's model as to improve it for future research by other logisticians interested on the topic.

Once the relief of aid has been given and the entire mentioned cycle has been followed in order to restore the beneficiaries lives out of human suffer, the authors of this research propose a return stage to be added at the end of the last stage. This proposed added phase could be known as a Reverse Logistics phase in any Humanitarian Relief of Aid.

This proposition has not yet been profoundly studied by other authors, making of this topic a very interesting and complex one to investigate. Moreover, it proposes a larger sustainable environmental impact to all communities in the world. The authors aim to explore about the consequences of the items brought to the disaster zones and they would also suggest possible alternatives to be followed to avoid
negative consequences for the community in danger and the environment surrounded by them.

On the development of this research, the first part would contain a logistics planning overview with relevant humanitarian and reverse logistics themes, for a better comprehension of the reader. Later on, some alternatives would be proposed.

2.2.5 International Aid Agencies and Non Governmental Organizations (NGOs)

Humanitarian agencies play a significant role for the international humanitarian support. Either private or public, they all aim to serve to the same goal. As Stoddard (2003, p.25) mentions “Private organizations are the primary implementing agencies of international humanitarian action”. Most of those international organizations are located in industrialized states founding their efforts in development, relief and social support.

Two NGO definitions from different authors are given next. It is also considered important to explain how far goes the NGO’s responsibility, which are the challenges they have to face, the bottom lines they pursue, under which principles they behave, and the impact it has on an international environment. Major NGO players are also shown later on this part.

According to Byman (2000, p.64), and getting deeper into what private organizations do, he describes NGOs as voluntary associations independent of government control that seek to provide humanitarian assistance according to need (cited in Beamon & Balcik, 2008). The author also explains two types of tasks provided by NGO’s.

a) Relief Activities, in charge of providing aid and assistance when a natural or man-made disaster occurs

b) Development Activities as mentioned by Beamon et al. (2008, p.5), these activities are in charge of bringing self-sufficiency and sustainability. The authors explain that activities such as establishing permanent and reliable transportation, healthcare and survival, are among the development activities.

As Stoddard (2003, p. 26) shapes “some of the biggest NGOs have increased their agendas from only initial emergency aid deliveries to long term anti poverty activities. The majority maintain both relief and development programmes and long term visions. A few of them have a unique relief purpose such as Americares, Feed the Children and Gifts in Kind International, which specialize in bulk deliveries of commodities”
NGOs main responsibility works towards its beneficiaries. Their logistics strategy is based on providing high level of service to the beneficiaries at low logistics costs. To provide support to the people in need, they need at the same time, the support of donors. Therefore, NGOs face a constant challenge over donations received. They also face extra challenges such as:

a) Funding constraints
b) Inventory Control
c) Constant Changing Environment
d) Donations aim only to specific disasters, and fulfilling donor’s desires
e) Host country entrance clearance
f) Transportation and distribution systems within the affected country
g) Dangerous environment to face on the affected country due to political, social or cultural pressures
h) Competition among other NGOs, private organizations and stakeholders
i) Difficulty in assessing demands
j) Oversupply of no needed items into the scene
k) Coordination among all the actors in the disaster zone
l) Restrictions in communication flow
m) Lack of effective IT systems
n) No needed Donations received
o) Complex, if not impossible to reallocate resources
p) Time pressure to alleviate suffer of beneficiaries
q) Loyalties Competition
r) The concern of the organization to endure and develop
s) Donors demand for transparency and accountability

(Moore, 2000; Lindenberg & Bryant, 2001, p.218) NGOs have two major bottom lines: mission effectiveness and financial sustainability (cited in Wassenhove, 2006). Their mission effectiveness has then a lot of pressure of time because it makes the difference between life and death (Wassenhove, 2006).
According to Willets (2000), there are six *principles* that are essential demands for a NGO:

1. An NGO should support the aims and the work of the UN
2. An NGO should have a representative body, with identifiable headquarters, and officers, responsible to a democratic policy-making conference.
3. An NGO cannot be a profit-Making body.
4. An NGO cannot use or advocate violence.
5. An NGO must respect the norm of non-interference in the internal affairs of states.
6. An international NGO is not established by intergovernmental agreements.

The *impact* of NGOs is getting stronger. According to Betsill and Corell (2001, p.67) NGOs have a huge participation in the international politics environment:

- They try to raise public awareness of environmental issues
- They lobby state decision makers hoping to affect domestic and foreign policies related to the environment
- They coordinate boycotts in efforts to alert corporate practices harmful to nature
- They participate in international negotiations
- They help to monitor and implement international agreements

According to Stoddard (2003, p. 26) the major NGO players which dominate the international non-governmental landscape are: CARE known for food delivery and logistics; Catholic Relief Services (CRS); Médicins Sans Frontieres (MSF) provides medical and primary health care; Oxfam expert in water and sanitation; Save the Children focusing on the needs of children; and World Vision. World Vision and Care rival each other for the one number position.

This last point makes reference to some of the challenges NGOs face day by day and as for further research would be interesting to investigate the reasons why these and other organizations rival each other, instead of playing a coordinated team work.

Another key point found during this topic research is about the term NGO which by definition clarifies the Non Governmental intervention. However, as Stoddard (2003) explains on her research, one quarter of the $2.5bn of US government funding for relief and development aid in 2000 went to four NGO’s: CARE, CRS,
Save the Children and World Vision. This of course leaves room for further research on what the NGO definition really means. Do they act without governmental financial support or not? Does that make them an NGO? Or the NGO term has a larger coverage as the two definitions written above?

Next some of the Major International NGOs:

**Action Against Hunger:**

**Mission:** Nutrition, food security, water and sanitation, health programs and disaster preparedness. Intervenes where survival depends on humanitarian aid, when natural or man-made crises threaten food security or result in famine, where societies in upheaval render populations extremely vulnerable.

**Structure:** Four branches: U.S., France, Spain, UK

Revenue and government support: Individual donors; Foundations; companies; UNHCR; UNDP; UNICEF; WEP; British, Norwegian, Dutch cooperation Agencies; government support from USAID, EU, French Ministries of cooperation and foreign affairs, Dept of humanitarian action.

**Adventist Development and Relief Agency (ADRA):**

**Mission:** Five core areas: Economic development, food security, primary health, disaster response and preparedness, and basic education.

**Structure:** ADRA Japan, ADRA Netherlands, ADRA Norway, ADRA Sweden.

Revenue and Government Support: FY 1997: support from U.S. government/ USAID, including commodities, excess property, grants, ocean and inland fright.

**Caritas Internationalis (Caritas Federation)**


**Doctors without borders:**
**Mission:** Aid to “victims of armed conflicts, epidemics, and natural and man-made disaster: others who lack health care due to geographic remoteness or ethnic marginalization.

Structure: MSF international (Belgium), Australia, Austria, Belgium, Canada, Denmark, France, Germany, Greece, Holland, Hong Kong, Italy, Japan, Luxemburg, Norway, Spain, Sweden, Switzerland, United arab emirates, United Kingdom, U.S.

**International Committee of the Red Cross (ICRC)**

**Mission:** “What we do: visiting people deprived of their freedom, protection of the civilian population, war and family ties, relief operations, health activities, general information, dissemination and preventative action, humanitarian diplomacy, legal work, advisory service on international humanitarian law”

**Structure:** Regional delegations, Cameroon, Republique de Cote’d Ivoire, Nigeria, Senegal, South Africa, Zimbabwe, India, Indonesia, Philippines, Thailand, Uzbekistan, Russian Federation, Ukraine, Argentina, Brazil, U.S. Guatemala, Kuwait, Tunisia, UN delegation in New York.

**Mercy Corps International:**

**Mission:** “To alleviate suffering, poverty and oppression by helping people build secure, productive and just communities”. Provides emergency relief service for people afflicted by conflict or disaster, invest in community development projects, runs “civil society initiatives” that promote citizen participation.

**Structure:** Headquarters in Oregon; regional offices in Washington DC and Washington state; Pax world service; Mercy corps Europe, Scottish European AID, Proyecto Aldea Global; Merciphil Development Foundation.

**Save the Children:**

Mission: To create safe places, enable family reunification and resettlement, provide land mine education, food security, and social and psychological assistance to children affected by war. Children in crisis program to provide basic education, economic assistance and health care.
2.2.5.1. **Coordination and Cooperation**

Within the supply chain management, coordination and cooperation are key factors to pursue the achievement of the final goal. This applies to any kind of supply chain, humanitarian logistics chain included.

According to Xu and Beamon (2006) within a supply chain, all parts are dependent on the performance of the others. “A coordination mechanism is a set of methods used to manage interdependence between organizations” (Xu & Beamon, 2006, p. 4) Therefore, the main challenge of the coordination mechanism is to organize the people, entities, and processes involved in the chain.

In order to reach the final goal of humanitarian relief aid, which is to provide support to those in risk of their lives and under suffer conditions, strong collaboration would be needed among all players involved. Collaboration encourages engagement of private sector and civil society and this brings as a result benefits to final beneficiaries as well as to organizations. Next factors are some of the benefits that could be faced when good coordination and collaboration is performed (S. Hertz, personal communication, 2010).

(+ ) Cost Reductions; which is based on the idea of collaborating together. If all resources –human and material- are well communicated, if tasks are well defined for each participant, then costs in the relief of aid could be reduced. The logistician assistance could support the decrease in costs

(+ ) Risk Reductions; while working together more ideas could be combined to avoid possible risks during the relief

(+ ) Access to Resources; Having oversupply of resources –in kind, financial and even human man power- if not well organized could create bottlenecks. Therefore, a benefit of having good cooperation and coordination among all actors in a humanitarian relief, brings more benefits than losses

(+ ) Knowledge and Learning; as new organizations arise on the humanitarian field, old organizations can always share their experiences and knowledge to make more efficient and productive the relief aid

(+ ) Need of Triangulation for Needs Assessment; sometimes the needs assessment process would work more efficient if organizations involved define tasks for each of them. Combining efforts could bring better results in less time

(+ ) Complementary – Deliveries of several products and services together; as Susanne Hertz mentioned in her class, some products need of other items in order
to function. Therefore, there is a need of bringing complementary items at the same time than the main items. Otherwise, it would take longer to provide the aid

(+) Need of continuous Information; there has to be visibility on the supply chain for all actors involved showing up to date information. This would allow all actors to make better decisions for every situation

(+) Safety in number and cooperation (life at risk); people involved in a humanitarian relief of aid, are always exposed to certain risk. Working all together as one team pursuing the same goal, would allow to even cover themselves of unexpected risks

(+) Speed Availability; if all actors coordinate their efforts and cooperate to make them effective, then the availability of all supplies would be reached faster by beneficiaries

Auf der Heide (1989); Miletí (1999) found that coordination may be inadequate because of geographical dispersion, insufficient or inaccurate communication between the field and the head offices of humanitarian organizations, and between different organizations (cited in Oloruntoba & Gray, 2006, p. 116). Dynnes (1994) explains that some organizations may exceed their authority and act in a controlling or domineering manner (cited in Oloruntoba & Gray, 2006, p. 116)

Byman, Lesser, Pirnie, Bernard and Waxman (2000) argues that there are too many participants in the field without a clear division of labour, and refer to differences between the focus of NGO headquarters and their field workers, with the former more concerned with relationships with donors than with delivery to aid recipients (cited in Oloruntoba & Gray, 2006, p. 116).

Features affected go from distribution channels to provide the supplies/aid to the ones in need to Political Issues, Bureaucracy and Customs to pay for donated inbounds.

(-) Politics;

(-) Ideologies;

(-) Religions;

(-) Bureaucracies;

(-) Competition of Donors (S. Hertz. Personal communication, 2010)

The alternative to avoid those obstacles could vary depending on the issue, but they all rely on one factor: Collaboration. For instance, bureaucracies, competition
of donors, ideologies and religions could all be avoided if people involved realized
the emergency situation lived and if they decide to collaborate as one team. As for
politics, that is an issue which could not be solved on camp, but among
governments.

In order to become effective in reaching the final goal, the coordination and
cooperation should start at the country's sending the aid. The organization level
would be more operational. Once the supporter country decide to help, they should
organize the type of in-kinds possible needed on the disaster. If they start
prioritizing the supplies, then it would improved the way to receive the inbounds
for the country in disaster, avoiding bottlenecks and agglomerations of supplies at
the ports of entrance. The decision level should be organizational structured, since
they need to receive and send information as well from/to the disaster zones. The
level of knowledge should be explicit in order to know exactly what is needed, but
it could be implicit as well, since the supporter country could at the moment decide
if some items are already expiring or not necessary for the relief.

Another factor that could improve the coordination and cooperation could start by
creating a preventing phase. Providing training to national or local organizations
before facing a disaster would prepare in a more efficient way the support
provided and received.

Three important factors mentioned by Xu et al. (2006, p. 5), which are also used
under commercial logistics, explain the coordination mechanism.

a) Interdependence, this concept explains how organizations influence each
other one. It could be either a cooperative or a competitive situation. First
one, would lead into a “win to win” situation, meanwhile the second one
would lead into one getting most of the benefits.

b) Uncertainty, this concept explains either when changes in the environment
are not predictable or when one cannot predict the actions of the
organizations involved in the chain.

c) Information Technology, according to what was taught at the Nordic Course
of Humanitarian Logistics in Helsinki, Finland at the Hanken University,
April 2010, IT represents the extent at which organizations are dependent
on information resources.

Each of them is necessary for a flow of cooperation among all parties.

(S. Hertz, personal communication, 2010) explains different types of cooperation
based on networks. There exists cooperation between two organizations, or
between a network and an organization or cooperation between one network to
another network.
The ideal would be to have a high level of integration among all participants in the field. Either they work solely with one organization or within a network, it would certainly facilitate the relief operation.

Problems arise when actors involved are more concentrated on the amount of donations they receive and deliver just to show off their solely effectiveness. Problems also appear when each actor has a different expectation on field. As mentioned before, political, cultural and ideologies differences also hinder the relief. Mostly is a matter of power among relief actors.

The objective would be to behave in a complementary way in the long term, not only on the rushing time.

Planning, organizing and controlling donations beginning from the points of origin would increase the level of cooperation and coordination. The very first point starts at the country sending the in-kinds, followed by the country receiving the items and informing about this regionally and internationally.

Gate keeping from origin sources would provide competent support to those in need. Further research under this theme is strongly recommended as the authors of this thesis could only focus on the Reverse Logistics topic.

2.2.6 Logistics Planning Overview

2.2.6.1 Donors, Donations and Recipients

In every relief activities, donors play a fundamental role in providing funds for humanitarian actions. Donations come from general public as well as from private organizations. Governments, international organizations, religious associations, count as well as donors.

The bulk of humanitarian financing comes from a set of wealthy industrialized countries. This is a group best represented by the Development Assistance
Committee (DAC) of the Organization for Economic Cooperation and Development (OECD). See Annex 1. However, there are also official donors active involved in humanitarian response such as some countries in Asia, States in the Gulf, the European Union, South Africa and countries in Latin America. According to the DAC, Official Development Assistance (ODA) is defined as flows to developing countries (Humanitarian Policy Group, 2005)

There are also another programs such as the Good Humanitarian Donorship (GHD) initiative which is an informal donor forum and network which facilitates collective advancement of GDH principles and good practices. It recognizes, that by working together, donors can more effectively encourage and stimulate principled donor behavior and, by extension improved humanitarian action. There are currently 37 members of the Good Humanitarian Donorship group who contribute through this forum to the pivotal role of donors in providing effective and accountable humanitarian assistance (Good Humanitarian Donorship, 2010)

As Tatham and Kovács (2007) clarify that humanitarian organizations work on getting founds from diverse donors and then transmit them to other organizations which at the end would be in duty of passing them to the final beneficiary. That is the case of charities done by per say, Oxfam, the Red Cross and individuals. According to Thomas (2007) and to reinforce what has been mentioned by Tatham et al. (p. 3) contributions from foundations, individuals and the private sector complement government donations to humanitarian organizations.

NGOs provide the service for donors to deliver the aid to the final beneficiaries. According to Beamon and Balcik (2008, p. 12) NGOs manage a relief chain, providing people, supplies, and services to the aid recipients. Therefore, donors are an important stakeholder to whom NGOs are held accountable.

The more media involved in the natural or man-made disaster, the more donations attraction to a specific relief. Unfortunately, most of this donations are aim to support a specific emergency, rather than a sustainable support in the long term. Beamon et al. (2008, p. 11) mention that donors tend to fund NGOs for specific missions or activities according to their own agendas and may not consistently contribute to infrastructure. This could perhaps complement the previous perception on helping in the short run rather as in the long term.

In 2009, at least 112 countries gave humanitarian aid. The OECD-DAC group represent some of the largest governmental humanitarian aid donors, between 90.1% and 98.7% over the last 10 years (Global Humanitarian Assistance, 2010).

The table next portraits the top ten donors and recipients in 2008:
<table>
<thead>
<tr>
<th>TOP 10 DONORS US$m</th>
<th>TOP 10 RECIPIENTS US$m</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States 4,380.8</td>
<td>Sudan 1,419.1</td>
</tr>
<tr>
<td>EC 2,009.8</td>
<td>Palestine/OPT 884.3</td>
</tr>
<tr>
<td>United Kingdom 1,017.1</td>
<td>Afghanistan 871.8</td>
</tr>
<tr>
<td>Germany 751.1</td>
<td>Ethiopia 829.6</td>
</tr>
<tr>
<td>Saudi Arabia 727.2</td>
<td>Somalia 566.7</td>
</tr>
<tr>
<td>Netherlands 632.9</td>
<td>DRC 547.1</td>
</tr>
<tr>
<td>Spain 629.0</td>
<td>Myanmar 427.7</td>
</tr>
<tr>
<td>Sweden 603.4</td>
<td>Iraq 382.1</td>
</tr>
<tr>
<td>Norway 450.6</td>
<td>Zimbabwe 335.1</td>
</tr>
<tr>
<td>France 444.9</td>
<td>Kenya 304.1</td>
</tr>
</tbody>
</table>

**TABLE 2.1: TOP 10 DONORS AND RECIPIENTS. Source:**
Development Initiatives based on UN OCHA FTS and OECD DAC data (2008) (Cited in Global Humanitarian Assistance 2010)

2.2.6.2. Managing Inventories

A disaster requires the delivery of food, medicine, tents, sanitation equipment, tools and other necessities to the people in distress, often for considerable period of times (Whybark, 2007)

In order to bring these items to the zones in conflict, and assuming all articles have already been sent by either donors, NGOs, private or public actors, the use of inventories become necessary.

As Whybark (2007) explains, there are different types of inventories, some used on the profit or military organizations such as strategic and defense inventories and some others used as relief inventories, which are classified for the same author as social inventories.

These last ones have the purpose to serve a community in suffer, due to a natural or man-made disaster, unlike the commercial inventories which are pursuing an economic benefit. The location, transportation and storage of items under the social inventories work under not expected situations. A clear example would be the procurement of goods, which are sent by external donors, NGOs, and a set of different actors not looking for a personal financial advantage on the items sent.

To illustrate the inventories managing process, Whybark (2007) details about three practices done in either commercial or humanitarian relief of aid.

- Acquisition
- Storage
Distribution

Acquisition entitles two different aspects. In a preventive stage, denotes the way to receive the necessary supplies and the method to storage it. The second aspect refers on how to foster procurement items and how to allocate them during the assistance provided in a disaster. If the procurement source is located in the nearby the affected zone, then the relief of aid would be easier to be given. Therefore, these potential sources become a key element of capacity -when non-political issues are involved- in the release of this type of aid. Complexities under natural or man-made disasters arises in the forecast of demand, since every relief of aid varies depending on different factors among them cultural differences. For instance, some countries are not allowed to consume certain kind of products, due to religion or cultural aspects. This of course increases the complexity to provide them a final relief of aid.

Storage physical location has to be determined depending on diverse factors such as finding the nearest range to the beneficiaries in order to be able to provide them with the necessary supplies. The location has to be established in a place where the items are well secured: Conditions in every disaster are not predictable and sometimes very variable. The physical location should be reliable in order to avoid turning the donated items useless when talking about perishable items.

As Whybark (2007) mentions on his research, the inventory should be accessible when the need arises, expiration dates should be constantly monitored in order for them to be useful when needed. Technological obsolescence is also an important concept when it comes to medical and communication equipment. In disaster relieves, the latest technology available is not as necessary as just having the right technology for monitoring critical items. This would extend its storage life significantly.

Distribution of relief items should be supplied without any political, religious or ethnic preference since the objective is to take beneficiaries out of suffer and dangerous conditions. Equally Whybark (2007) mentions, the purpose is to save lives and to bring beneficiaries back to their normal life, which would bring only humanitarian outcomes. He also mentions some difficulties presented on the delivery of items. First, it is difficult to measure the inventories values, since most of them have been donated. Secondly and very important concern becomes when political issues intervene in the purpose of providing relief to people in suffer. Some countries might not accept to receive support by certain other countries, depending on the political relationships among them, making of the relief of aid a more challenging one.
Managing disaster relief inventories requires that they be first “pushed” out of their storage locations as part of the disaster planning activities (Whybark, 2007, p. 233).

This refers that when a disaster arrives and the relief of aid starts to be provided, then items would need to be given to the people in need by a merely analysis done in previous natural disasters as well as for the previous analysis made by logisticians and relief actors. Once the beneficiaries are more settled into better conditions, the demand turns into “pull” demand, where the beneficiaries request for certain supplies enabling relief actors to provide what beneficiaries expect.

2.2.6.3. Access in the Last Mile Distribution

Once the relief aid process has begun, and all the supplies have been brought to the scene, logisticians as well as people involved on the humanitarian relief, face a very important key issue: how to bring the In-Kinds to the very last beneficiary.

Assuming the donations have been brought to the country in danger, and that they have followed already a logistician route and arrived in a determined port of entrance to the country, there should be created an additional logistician path to bring all those supplies to the very last people in need, who are mostly living in the most affected areas. This process of finding the right way and bringing the supplies up to the last in need is then exactly the point called Last Mile Distribution.

Balcik et al. (2008, p. 28) define Last Mile Distribution as the final stage of a humanitarian relief chain; it refers to the delivery of relief supplies from local distribution centers (LDCs) to beneficiaries affected by disasters.

Local Distribution Centers are usually established post disaster in locations that have access to the affected regions. An LDC may be a tent, a prefabricated unit, or an existing facility. They could also be considered as independent clusters with enough capacity to serve a certain region. An LCD should be selected depending on its security and safety, transportation infrastructure and available transportation modes (Balcik and Beamon 2008)

Once a natural or man-made disaster has passed, it is difficult to overview how much damaged would be encounter. Damages in transportation infrastructure are always found, making the task of delivering the supplies a very tough one and sometimes even dangerous.

Every natural or man-made disaster’s relief of aid differs from one to another depending on the level of damage done in the zone, but as Balcik et al. (2008) explain, there are two significant logistical problems generated in the last mile. The
first one refers to the difficulties in transportation of emergency supplies due to damaged infrastructure and the second one refers to the deficiency on coordination among relief actors. Facing up a coordinating way to provide the in-kinds and the distribution of those in-kinds with a low transportation infrastructure, becomes a big challenge among all the actors involved on the chain.

When it comes about natural disasters, either the national infrastructure is severe damaged or when that is not the case and the transportation exists, the supply of gas needed could become scarce, making of this another challenge to surpass.

Logisticians are sent to the zones to determine the needs of supply. Once they provide this information, it is possible then to decide on possible LDCs locations and issues concerning the distribution of items. Balci̇k et al. (2008, p. 53), Last Mile Distribution is in charge of determining:

1. Delivery schedules
2. Vehicle Routes
3. The amount of emergency supplies delivered to demand locations during disaster relief operations

These three points refer to what extent do logisticians could coordinate the types of in kinds sent to each LDCs, the transportation method needed according to the circumstances, and the amount to be sent. It is important to highlight that due to the damages on roadways, different types of vehicles would be then employed. For instance, to carry on items to the first hub, one needs big transportation systems, but as closer as one gets to the final beneficiaries, probability of finding damaged or even non-existence roads, would mark the difference between big or small ways of transportation

2.2.6.4. Performance Measurement

Performance measurement under Humanitarian Logistics has been a very challenging topic to develop. Circumstances under relief actions are always harsh to predict. Therefore, measurement systems cannot be applied in a standard way in each natural or man-made disaster.

Establishing performance metrics in profit and nonprofit organizations is a complex task. Measuring inappropriate performance can lead to a profit company chasing the wrong goal. Metrics drive behavior – what you measure is what you get. Some characteristics of good measure metrics are explained under the next figure: (L. Larsson, personal communication, 2009)
Figure 2.12 Characteristics of Good Measures. (J. Larsson, personal communication, 2009)

For commercial logistics several concepts have been developed to measure either their financial incomes, benefits or the service provided to their stakeholders. Concepts such as financial ratios, level of items returned, customer claims provided by its customers, employees turnover within a company, company’s expansion into new markets, wasted generated on general manufacturing processes, increase of their target market, all of them could be employed as performance indicators.

For profit organizations would not be as complex as in a humanitarian organization to measure perhaps:

- The number of items returned by customers after a purchase,
- The increasing number of items bought in a repetitive way by the same customer,
- To count the number of claims received by the firm,
- To determine the expansion growth of the company in a specific period of time,
- To calculate different financial ratios
- To assess employees’ rotation and find their satisfaction level.
As for the humanitarian logistics actions, these concepts could not be applied in the same way than commercial logistics. According to Beamon et al. (2008) “humanitarian logistics face intangible additional challenges such as the difficulty to measure the service provided to last beneficiaries, the abstract way to measure each mission, the non yet known results of it, and the diversity of stakeholders involved in each mission”

Interests and standards of stakeholders are also complex to measure. A very appealing phrase written by Sawhill & Williamson (2001), which does not leave room for not understanding the difficulties in measuring the performance in any relief of aid, says: How can someone measure human suffer? (cited in Beamon et al. 2008, p. 8)

So far, under the humanitarian aid information provided by the media, demonstrate the quantity of donors employed by each relief of aid, as well as the amount of money collected by any humanitarian organization and the description of in Kinds sent to the conflict zones, among of course some other factors.

What makes even more complicated the way to measure the performance in humanitarian support is the difficulty to differentiate between the expenditures made under relief and development support, as in the case for water and sanitation which are used for both classifications.

However, metrics measured in both types of organizations should be done based on the inventory, transportation, distribution, logistics and supply chain factors. IT plays a key role to maintain all the supply chain informed of what is happening in each stage of the chain. Unfortunately, under the humanitarian relief of aid, technology could not always being used as a powerful tool since the unpredictable, dynamic and chaotic environment of each relief operation changes from time to time making of IT a not very well developed tool. This disadvantage becomes then a big challenge to face and it creates another field that could be studied as further research by logisticians interested in the topic.

There are also other factors affecting the performance measurements such as pressure of time that makes the difference between life and death. It is even important to highlight that once the relief of aid is given, would the measure be done according to death? This phrase portraits the complexity of performance measurements under humanitarian logistics.

As mentioned by Beamon et al. (2008) performance measurement systems require to be created and to be developed in order to improve the whole efficiency and effectiveness of each relief of aid.

By reading different authors it was found that most of the performance metrics center their attention on the inputs rather than on the outputs. Kaplan (2001)
differentiates between financial inputs (donations, expenditures, and operating expense rations) and non financial inputs (hours spent). This input concept does not necessarily measure what the complete humanitarian relief of aid aims to achieve. It does measure part of what is needed to be assessed, but it lacks another significant half. Without these two concepts together, the feedback for future improvements could not be easily achieved (cited in Beamon et al., 2008, p.15)

For instance, increasing donations, as mentioned by Letts et al (1999) does not necessarily increase the quality of services nor the capacity of the organization to deliver (cited in Beamon et al., 2008, p.15). This is supported as well by Kanter and Summers (1987) who find no relation between resource allocation and resource attraction (cited in Beamon et al., 2008, p.15). An organization could be efficiently able to attract millions of dollars for a certain relief of aid, but might fail effectively to allocate them in the right places, perhaps due to the chaotic environment of the disaster. This idea supports the observation made before, that is not only the inputs that count, but how can those inputs could really achieved their ultimate objective (cited in Beamon et al., 2008, p.15)

This last perception mentioned is also further studied on the donations identification-reallocation and waste definition coming ahead in the development of this thesis.

As for a framework to assess performance in humanitarian aid, Beamon (1999) outlines three metrics: (cited in Beamon et al., 2008, p.16)

- Resource Metrics
- Output Metrics
- Flexibility Metrics

**Resource Metrics** by Beamon (1999) indicate the level of efficiency in the relief chain. They calculate approximately the funding necessities and it gives more transparency the supplies and support given by the stakeholders. It analyzes the effects on supplies, distribution and inventory holding costs. Under a relief of aid local tariffs and taxes of incoming goods make more complex the quick respond. Managing inventory in the wrong way could create an extra cost due to obsolescence and spoilage of the supplies (cited in Beamon et al., 2008, p.16)

**Output Metrics** evaluate characteristics of the supply as the amount of aid effectively provided in terms of responding time and the supply availability. There are two types of supply tiers. Tier 1 items are especially critical supplies such as jerry cans, tarps, tents, blankets, hygiene kits, mosquito nets, tarpaulins. Tier 2 items are the less critical supplies that can be provided after the first emergency supply has been done. These kinds of items are consumed regularly and its
demand occurs periodically over the planning horizon. For instance, food and hygiene kits (Balcik et al., 2008). The output metrics include the availability of supplies given to aid recipients.

*Flexibility Metrics* are divided into Range and Response metrics. The first one refers to what extent the operation can be changed and the second ones describe the ease in terms of cost and time, with which the operation can be changed. It also refers on the ability needed to respond to different magnitudes -*Volume Flexibility* - or the time to respond to disasters -*Delivery Flexibility*- and the ability to provide different types of items – *Mix Flexibility* (Balcik et al., 2008, p.17)

Under this performance assessment framework, a logical path to evaluate humanitarian relief of aid is explained in a general way. However, this topic could call more logisticians for further research since this framework does not specify exactly how to measure each metric. It mentions what is needed to be measure, but it does not detail how to perform it in an explicit manner.

Nevertheless, under Balcik et al. (2008, p.54) Beamon details in a more specific approach, how to charge penalties for each unsatisfied unit (backordered) of Tier 1 demand and how this penalties accumulate over time. Once Tier 1 items arrive, they should be allocated to aid recipients. This type of demand is a little more difficult to fulfill since there could be supply unavailability due to vehicle capacity limitations. For the Tier 2 items, on one side, if they are not satisfied on time, they cannot be backordered making of this unsatisfied demand a lost and a penalty costs accumulates for each unit of lost demand. On the other side, if Tier 2 items are supplied in excess, they can be held for future consumption. Therefore, inventory holding costs are ignored.

Any unsatisfied demand increase beneficiaries vulnerability, and in real terms it is very difficult to quantify the real cost of unsatisfied and late satisfied demand under disaster relief operations. However, this framework of assigning a penalty cost factor to each type of item at each location enable a better performance measurement approach.

As mentioned by the global humanitarian assistance organization, counting humanitarian aid is a very complex task since many actors are involved on it and all of whom, report their contributions in different ways. There are information gaps of what has been delivered on the ground and there is no feedback from people affected by crises making hard to measure humanitarian response.
2.3 Differences between Commercial and Humanitarian Logistics

On one hand, some organizations focus their goals and efforts in the increase of their economical, financial and expanding profits. On the other hand, other organizations are devoted to support people in need by providing them the necessary items for any survival situation, without expecting any economical private profit.

Under Beamon et al. (2008, p.6-7) research, they found four big differences among profit versus non-profit organizations:

a) Revenue Sources under the Non-Profit organizations are then obtained by charitable donations, government funding as well as by in-kind donations defined as non-monetary contributions such as goods and commodities. Sometimes also by fundraising and the sale of goods and services, but with certain limitations due to taxes relief given to them by the government. The financial surplus cannot be then distributed among any of the people in control. Whereas for Profit organizations, revenues are earned by the sale of products or services to customers and revenues are distributed by the ones involved in the commercial business.

b) Goals for a Profit Organization would be then to increase their profits as to be able to satisfied higher financial returns to its stakeholders. The aim for Non-Profit organizations would not be the personal richness, but to achieve a social purpose. As mentioned by Beamon et al. (2008, p.7) the ultimate goal of the relief chain is to save lives and reduce human suffering, given financial constraints.

c) Stakeholders vary among those two types of organizations. For the Profit ones, shareholders, customers, employees, retailers and suppliers are the ones that expect either financial or personal benefits. For the Non Profit organizations, the financial and in-kind donors, volunteers, staff, and recipients of services are counted as stakeholders (Beamon et al., 2008, p. 7)

Next figure shows the stakeholders that contribute to the Non-Profit organizations.
Comparing this last figure to the one offered by the Fritz Institute (Thomas, 2007) Figure 14, more stakeholders could be added to the figure, such as media which plays an important role to keep all stakeholders informed of the current situation.

**Figure 2.14 Humanitarian Logistics Stakeholders. Thomas. A (2007)**

d) *Performance Measurement*. This concept was explained above in section 2.2.6.4, as the authors of this research found that it deserves more consideration.

Both types of supply chain require agility, adaptability and flexibility, but under the relief chain, actors work under an unpredictable environment. On the next figure,
it could be appreciated the main points where differences exist between Commercial and Humanitarian Logistics.

![Figure 2.15 Differences between Commercial and Humanitarian Logistics. (M. Calleros, personal communication, 2010)](image)

### 2.4 Reverse Logistics Concept

Not all the supply of products, components and materials employed within any organization stream only in a forward course. These elements are composed by material which, when used properly could be reused, recycle and refurbish. This type of restore has been known as a backwards path called: Reverse Logistics.

Reverse Logistics is a process of moving or transporting goods from their final destination for the purpose of capturing value or for proper disposal. There are four levels of Reverse Flows:

- **Products failed, unwanted, damaged, or defective; can be repaired or remanufactured and resold**

- **Products old, obsolete or near the end of their shelf life; have still some value for salvage or resale**

- **Products unsold by retailers are usually referred as overstocks, but they have a resale value as well**
• Products being recalled due to a safety or quality defect; may be repaired or salvaged (H. Jafari, personal communication, 2009)

More definitions could be found about this term. Some of them would be described on this paper to understand different points of view.

In a very easy way to understand the term, Pohlen and Farris (1992) defined it as “the movement of goods from a consumer towards a producer in a channel of distribution” (cited in Britto & Dekker, 2002). This definition does not explain in detail the final purpose of Reverse Logistics. However, it provides a general idea of what the concept is.

As explained by Brito et al. (2002), “Reverse Logistics concerns activities associated with the handling and management of equipment, products, components, materials or even entire technical systems to be recovered. Recovery can be reselling or a series of process such as collection, inspection, separation, remanufacturing and recycling”

The definition given by Rogers, Dale, Tibben-Lembke, Rand and Ronald (1999) describe it as the process of planning, implementing, and controlling the efficient, cost-effective flow of raw materials, in-process inventory, finished goods, and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal (cited in Brito et al., 2002, p.3)

After reading these three definitions, a suggestion given by Brito et al. (2002), encircles the focus of this thesis. They mention that they do not consider overstock as points of consumptions, since overstocks are not to be consumed. This part could be deeper analyzed forward on this research, since the authors of this thesis suggest the permanent existence of demand for any overstock. This proposition suggests a second in need market which could consume the overstocks presented in any logistics path.

Brito et al. (2002) also refer that material or finished items do not necessarily need to get re-produce in the same article than before. Material has the capability to be employed in another item or chain. This is exactly the motor of this research, as the authors of it believe there are other alternatives to follow for items used by beneficiaries under the humanitarian relief of aid. This of course would be later deeper studied.

Under the Reverse Logistics concept, there are some similar terms, which also refer to the same topic and they also possess the same meaning. Some of them are: Return Logistics, Retro Logistics and Reverse Distribution. They all aim to the same definitions mentioned before.
By seeing the next two figures showing the flow of a Traditional Open Supply Chain followed by a Reverse Supply Chain, one would be able to understand how the flow of material should be going two ways: Forward and Backward as well.

Under the forward process, and as any other supply chain figure, it is easy to identify the flow of goods from the beginning to the last phase, but a remarkable point on this figure is exactly the last part of it. There is an open arrow ready for the next process, meaning that the supply chain process is not yet over.

**Figure 2.16 Traditional Open Supply Chain. (L. Yinghui, personal communication, 2009).**

Even though the item has reached the final user exposure, the process would still remain open. The reason for this relies on the fact that the purchased item would end one day or another as a not feasible product. Here is where the purpose of the reverse logistics becomes a necessity. The remaining parts of the item could be sent back to the source of origin to a second or longer reused, recycle or remanufactured process. These two combined ways allow the entire life cycle of a product to reach the end of the process and to finally close the already open circle.

**Figure 2.17 A Reverse Supply Chain for Product Return. Blackburn J., Guide, D., Souza, G., Van Wassenhove, L. (2004)**
Another term employed under the Reverse Logistics is known as Closed Loop Supply Chains (CLSC). CLSC are designed and managed to explicitly consider both forward and reverse flows activities in a supply chain (H. Jafari, personal communication, 2009)

This last term refers more to logistics processes as that they should be finished in circles or cycles combining both forward and reverse logistics together as one practice. Otherwise, the loops preserve open, not granting the opportunity for materials to be returned and recover to what they used to be. This encircled process is explained by Brito et al. (2002) as either Physical – Original to user- or Functional – Original functionality.

Two more definitions: Closed Loop Supply Chains are designed and managed to explicitly consider the reverse and forward supply chain activities over the entire life cycle of the product. Closed Loop Supply Chain Management is defined as the design, control and operation of a system to maximize value creation over the entire life cycle of a product with dynamic recovery of value from different types and volumes of returns over time (L. Yinghui, personal communication, 2009)

The process requires the involvement of the whole stakeholders, starting from the supplier's supplier up to the customer's customer and back to the beginning in order to be reused and recycled. Under this kind of flow, customers and retailers play a key performer role to achieve the reverse process purpose. Their involvement becomes then highly demanding to be able to reintegrate items or materials to the chain. Without their contribution, the backward path would be then seriously challenged.

To illustrate this concept, Kodak's firm shows the pattern follow by stakeholders on the process of disposable or Single Use Cameras on the photography market.
As it could be observed, the camera's components are provided by a supplier. Later, they are manufactured and sent to the retailers. Once the consumers buy the product, they themselves are meant to bring it back to retailers, and those last ones back to the manufacturer. This path allows the recover, under the reverse logistics point of view, to be developed.

Recovery activities of the product return are named as *Repair, Refurbishing, Remanufacturing, Cannibalization and Recycling*, and they are based on the Product Life Cycle. The return could be commercial, end of use or end of life return.

Next table shows an assortment of product recovery options.

<table>
<thead>
<tr>
<th>PRODUCT RECOVERY OPTIONS</th>
<th>Level of disassembly</th>
<th>Quality requirements</th>
<th>Resulting product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repair</td>
<td>To product level</td>
<td>Restore product to working order</td>
<td>Some parts fixed or replaced by spares</td>
</tr>
<tr>
<td>Refurbishing</td>
<td>To module level</td>
<td>Inspect all critical modules and upgrade to specified quality level</td>
<td>Some modules repair/replaced; potential upgrade</td>
</tr>
<tr>
<td>Remanufacturing</td>
<td>To part level</td>
<td>Inspect all modules/parts and upgrade to as new quality</td>
<td>Used and new modules/parts combined into new product; potential upgrade</td>
</tr>
<tr>
<td>Cannibalization</td>
<td>Selective retrieval of parts</td>
<td>Depends on process in which parts are reused</td>
<td>Some parts reused; remaining product recycled/disposed</td>
</tr>
<tr>
<td>Recycling</td>
<td>To material level</td>
<td>High for production of original parts; less for other parts</td>
<td>Materials reused to produce new parts</td>
</tr>
</tbody>
</table>

Table 2.2 Comparison between Product Recovery Option. (L. Yinghui, personal communication, 2009)

This process however, requires the active participation of all the actors in the chain, representing a high level of willingness for end consumers to begin the process back and be able to finally close the loop.

Some techniques are used to pull end consumers to be willing to participate on the return of items. They receive a certain prize for every delivery back. Many
manufacturing firms actively influence product returns by providing incentives for the return of products. These practices are called *Market Driven Returns*. Examples of these are deposits, credit given towards a newer acquisition, or trade in. These incentives assured a higher level of returns to the organization in need (L. Yinghui, personal communication, 2009)

Additionally, some firms in some countries are also involved on the return process by Producer Responsibility Laws. These laws drive Electronic, Automobile and other Durable Goods Firms to receive back from end consumers the *E-waste* generated by their purchase. This is known as *Waste-Stream* (L. Yinghui, personal communication, 2009)

E-waste belongs as part of the Reverse Logistic Cycle, but focusing on electronic equipment. The objective is the same, to bring back to the original source the elements that could be reused, recycle or remanufactured.

In any type of reverse logistics cycle exists barriers that hurdle its purpose. For instance:

- The misperception among customers. They might have an erroneous idea of not receiving back what they paid for, or they might unknown the benefits of reversing a purchasing process.

- Difficult forecast of product returns. The firm cannot control nor forecast the level of return rates. Therefore, it complex to determinate the financial benefits that the firm would develop.

- Complex Marketing (Cannibalization is a significant concern)

- Avoidance. The same misperception of the reverse path importance given by end users could just make them evade the possibility of returning the items and reduce the reverse cycle times.

- Gate keeping in the case when end users do not even drop their used items and they just keep them with them as long as they can. A zero return is then presented.

- The scarcity of return centers. It complicates the support given by the end users when they are willing to help (H. Jafari, personal communication, 2009)

These barriers challenge the reverse logistics processes. Negative consequences are now being faced by the worldwide community due to the lack of importance given to this topic. There should be more environmental responsibility and active participation of the world community. This research intends to inform more people about this topic.
2.4.1 Waste Definition and its consequences on Humanitarian Logistics: Bottlenecks

When a request for international support is given by the country in danger, donors contribute by supplying in-kinds, financial assets, volunteer job and general assistance to the zone in danger.

Once this relief of aid arrives to the conflict zones, three opportunity areas are often identified:

- The excess of supply (Oversupply of items),
- The supply of unsolicited goods, and
- The supply of non-effective items, due to past expiration date

These three concepts, when presented, challenge the agile supply of items to the people in need, creating extra chaos to the ports of entrance, bottlenecks for the responsive distribution, and generating a certain level of “waste”.

The restricted access due to an agglomeration of assets in the ports of entrance, confuse the development of an effective relief of aid from the beginning. Extra factors such as a deficient and slow customs clearance due to either cultural factors or lack of exact necessary papers -bureaucracy- only increase the disorder from the commencement. This issue is reflected in bottlenecks, a lack of coordination of all stakeholders, a gap in information flow, and as Pedraza (2010, p.5) mentions, warehouses congestion resulting in unhandled vital aid.

Next some definitions of waste which are relevant for this job are going to be explained for a better understanding of this research.

According to the definition of the European Parliament and of the Council (January 2003) defines waste as any substance or object which the holder disposes of or is required to dispose of pursuant to the provisions of national law in force.

E-Waste refers to all the electronic products, which due to the end of their life cycle are not in current use. They are composed by several gears which, when not well recycled could cause hazard to human and nature environments.

According to Widmer, Oswald, Sinha, Schnellmann and Büni (2005, p.438) Electronic waste or e-waste for short is a generic term embracing various forms of electric and electronic equipment that have ceased to be of any value to their owners.

of the Council (January 2003) it is defined as “Electrical or electronic equipment which is waste. . . including all components, sub-assemblies and consumables, which are part of the product at the time of discarding” (cited in Widmer et al., 2005)

An interesting data given by the Greenpeace Organization says: “Electronic waste (e-waste) now makes up five percent of all municipal solid waste worldwide, nearly the same amount as all plastic packaging, but it is much more hazardous. Not only developed countries generate e-waste; Asia discards an estimated twelve million tons each year. In the world, e-waste is now the fastest growing component of the municipal solid waste stream because people are upgrading their mobile phones, computers, televisions, audio equipment and printers more frequently than ever before. It is estimated that around twenty to fifty million tonnes of e-waste is dumped each year. If you put it into containers on a train it would go once around the world” (Greenpeace, 2011)

Another definition given by Canel, Rosen and Anderson (2000, p.51), waste is defined as “anything other than minimum amount of equipment, materials, parts, space, and workers’ time, which are absolutely essential to add value to the product or service”

Among all the researched definitions of waste, there is one found by the authors of this research that fulfills the meaning of the chosen topic.

Zero Waste America defines waste as "a resource that is not safely recycled back into the environment or the marketplace." The word 'waste' and the act of 'wasting' are human inventions (Zero Waste America).

The position taken by the researchers of this thesis aim to show how all the supplies brought to the scene, and the effort made to bring this relief of aid, should not been classified as a waste, since as mentioned before, waste is a human creation.
3 Methodology

3.1 Research Approach Selected

In order to develop a better understanding for the reader of this investigation, the Research Method for developing this thesis should be explained. First, a brief description of the mentioned term would be given and later an explanation of the chosen method.

According to Mingers (2001, p.242) Research Methods make implicit or explicit assumptions about the nature of the world and of knowledge. They could be seen as instruments for provoking a response from the world. The nature of the respond depends on both the world and the instrument.

There are two ways to conduct a research: Under a **Quantitative** or a **Qualitative** Approach. In brief, **Quantitative Approach** entails the collection of numerical data (Bryman, 2001).

**Qualitative Approach** as Denzin and Lincoln (2000, p.3) mention, involves the studied use and collection of a variety empirical materials – case study, personal experience, introspection, life story, interview, artifacts, cultural texts and productions, observational, historical, interactional, and visual texts- that describe routine and problematic problems and meanings in individuals lives. This means, that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret phenomena in terms of the meanings people bring to them. Qualitative researchers approach research with no fixed ideas – “bottom up approach” (Montague J.)

As for this research, the **Qualitative Approach** would be employed.

According to Marshall and Rossman (1999, p.33), depending on the purpose of the study, the qualitative approach could be divided into:

- **Exploratory.** To investigate little understood phenomena. To identify or discover important categories of meaning. To generate hypothesis for further research.
- **Explanatory.** To explain the patterns related to the phenomenon in question. To identify plausible relationships shaping the phenomenon.
- **Descriptive.** To document and describe the phenomenon of interest.
- **Emancipatory.** To create opportunities and the will to engage in social action.

The chosen method for this research would be then **Exploratory**, firstly because it aims to provide deeper insight and understanding about the problem (Yin, 2003).
and secondly, because the Semi-Structured Interview technique would be the tool used to obtain this information. This type of interview settle on some questions to follow, but it also allows the interviewee to freely talk about the chosen topic. It would also have an Emancipatory purpose, because it intends to engage in social action.

3.2 Managing the Information of this Research

The topics of this thesis were selected in a progressive way to make the readers understand the relevant concepts under the Humanitarian Relief of Aid even if the reader is not aware of the topic.

The organization was made following a logistics pattern. At the beginning it was chosen to define Profit and Non Profit logistics terms. That definition would involve the reader on the topic. Later on, as in a logistics supply chain, themes were selected. For instance, first themes up to the explanation of disasters cycles could be seen as the basic material from where each disaster begins. Secondly, International Aid Agencies and NGOs act as suppliers of items for those in danger. Later on, all those supplies brought to the scenes, need to be pile in warehouses as inventories and after a strategic decision, these inventories are distributed to the last beneficiary. Therefore, topics such as Managing Inventories and Access were studied. After explaining all these steps, it became necessary to discuss the reverse logistics and waste term to immerse better in the topic.

As mentioned above, Semi-Structured Interviews were the tool to solve the research questions written above. The explanation of the Interview Model would be done later on this module.

By analyzing the results of this investigation, some alternatives for the oversupply of items would be proposed and also explained in more detail later on this thesis.

Finally, further research on similar topics are proposed on the last part of this investigation, hoping for more logisticians to focus on these topics as there is a small proportion of information related to a Humanitarian Logistics aspect.

3.3 Data Collection and Selection of Participants

This research gathers existing information (Secondary Data) as well as Primary Data techniques, in this case: interviews. Basically, the analysis of previous studies, articles, journals and experiences from people on the field, would be the base to support the researcher’s proposed alternatives. After it, interviews would be done to different humanitarian organizations to complete a better understanding of the natural disaster process. By employing both secondary and primary data, the
authors would be able to propose alternatives to follow for the application of a reverse logistics phase.

The researchers chose randomly different humanitarian organizations: Governmental, Private or Non Governmental Organizations. These associations were situated in three countries: Sweden, Finland and Switzerland. The selection of countries was made due to the international background of the authors of this thesis. The organizations contacted were:

From Finland: Hanken University, the Red Cross due to a visit done in April 2010, where the authors had the chance to ask a question related to the humanitarian logistics process.

From Sweden: Plan Sverige, Lions, Läkarmissionen Röda korset, Unicef, Svenska kyrkan, Läkare utan gränser.

As for Switzerland: Glückskette- Swiss Solidarity Organization, Helvetas, Helpforchildren.

3.4 Problems and Weaknesses

The first semi-structured interview could not get a lot of participation. The interviews were sent first via email to make the interviewee know what the topic was about. The authors believed that it was found too long for the interviewees to fill it. Then later, to reduce the effects of a lack of participation, a new interview with only four questions was made to be applied. The interviews were sent via email due to the internationality of the sample. Organizations in Sweden, Switzerland and Finland were selected.

Finding active participation back from some of these and other organizations was remarkable hard to get.

It would be difficult to determine whether this innovative Reverse Logistics suggestion would be truthfully applied to the next coming natural disasters. However, information provided at the end of this research, would be found valuable for future generations working under this field.

The difficulties presented in a real natural disaster would struggle the application of the proposed alternative. This pragmatic alternative would be then empirically suggested.

Sources of information related to the selected topic in humanitarian logistics under a reverse logistics point of view are scarce, challenging the aim of this research. Furthermore, information given by the media over any natural or man-made disaster is on its majority focused either on the current situation lived by the
people on the disaster zone or it focuses more on the marketing advertising such as: how much money has been given by donors, which countries have participated and which Non Governmental Organizations (NGOs) are contributing to the relief of aid, all these of course with some political connotations. Unfortunately, media information would not talk about the difficulties of how supplies flow in the disaster zone and the difficulties given even between different NGOs, which sometimes also complicate the final relief of aid. Teamwork and IT systems are some of the times two important lacking factors in scene.

Another issue faced during the development of this thesis was the scarce knowledge on environmental issues and sustainable development. Knowledge on diverse substances, how to reduce the use of energy, gas emissions, or petrochemical industry familiarity that affect the environment, were also necessary to understand to provide the reader with more specific solutions.

At the moment of researching under this final project, none of the authors have been in any natural or man-made disaster relief so far, so the information has been taken from data already existing (secondary data) as well as others people experiences and interviews with experts on the topic (primary data).

3.5 Interviews Explanation

Two Semi Structured Interviews were proposed. Every question written here was meant to be used only as a guiding tool. This would allow the interviewee to freely talk about the topic, but it would also support the interviewer to know how to let the conversation flow easily for both parties.

The first proposed interview contained these next ten questions.

What is the process to follow in any Natural or Man-Made disaster? Phases, stages.

This question would only be used as an introduction to the topic. This would allow the interviewee to know in which direction the interview goes and as for the researchers, the answer would support what was taken as secondary data for the development of this investigation.

Explanation of the In-Kinds cycle. Starting from receiving the In-Kinds (given by donors) up to the provision of them to the final beneficiaries.

This question leaves room for a long answer back. Here the researchers would be able to find immediately if there is a follow up of the items brought to the beneficiaries, but in case the interviewee forgot to mention any step, then the next
questions were written to recheck if there is a Reverse Logistics phase, which perhaps does not have literally this name.

**Does the cycle ends once the last beneficiaries receive the In Kinds? Or what is the very last cycle provided by the organization?**

As just mentioned above, this question remarks only if anything on the steps the interviewee said, was missed.

**After giving the In Kinds to the last beneficiaries, what is the follow up given to those products.**

Maybe there are items which are really followed up by the organizations in the field. If so, then the researches would be able to classify a certain level of reverse logistics in specific items.

**Is there any organization focusing on recycling the brought materials?**

This question is totally focusing on what the topic is about. The answer could lead to maybe some organizations focusing on this theme or maybe to confirm the lack of existence over the Reverse Logistics.

**How long does an organization last in action on the disaster zone? Once all is back to normality.**

Starting from this question, the researchers look for ways to consolidate proposals for future disasters. Maybe the organizations last for years, months or only days. But if there is a chance for organizations to last for longer than six months, then there is also a good opportunity for them to focus on the recycling area.

**Are there logisticians working full time by your organization? How necessary are they for the success of the distribution of In-Kinds to the disasters zones?**

This question intends to discover if there are any logisticians working regularly by the organization. As the researchers of this investigations are logisticians, then there is a strong believe that logisticians resources could be one key to promote the recycling phase.

**Under your experience, how does the oversupply of goods is handle? What happened with all those items?**

Since the researchers already have a vague idea of what to do with all the items brought to the conflict zones, then this question is done to see if it already exists any of the alternatives offered by the writers of this thesis.

**When does any humanitarian organization responsibility ends in any Natural or Man-Made disaster?**
Here the authors want to reinforce the idea that the responsibility relies in every actor, organization or institute which work in there.

Observations and comments about the model made by Safran (2003)

As for this model, it has to be said that this was the starting point of the realization of this thesis. Even though the cycle looks perfectly detailed, it also demonstrates that a lack of Reverse Logistics exists in any Relief of Aid.

The selected questions for the interview applied are the next ones, as well as an explanation of them. Questions left always room for the interviewees to speak openly about the topic, allowing them to enrich their answers by adding even simple details. This way both the interviewer as well as the interviewees had the chance to give and receive more detailed information.

1. **Once the natural/man-made disasters and danger have passed, does it exist any record of the items and donations brought to the beneficiaries? Do you know what the beneficiaries do with them once they have received them?**

   This question intends to investigate how much information the interviewee posses about the topic of this research. It allows the interviewer in first instance to find out if the selected organization posses any knowledge about the topic. Their answers could also provide a guide of where to focus, which other organizations to interview, or maybe they could bring more ideas to the table.

2. **Do you know if any of the brought or donated items have caused environmental disorders in the long term?**

   This question would confirm the necessity of a reverse logistic concept in any natural/man-made disaster. Examples could also being brought by the interviewees, making the topic more comprehensive for the reader.

3. **Do you know if it exists any recycle phase of the donated items brought to the beneficiaries once everything is back to normality?**

   This question is totally directed to the topic in question. It would confirm or deny what they previously said. The interviewee could also add any suggestion to the topic in question.

4. **Any extra comments**

   This leaves open room for any extra information, question, suggestion they would like to add.
4 Outcomes and Findings

On the next part the interviews responses would be added, followed by a brief analysis of them on the next section called Analysis. Finally, five proposals for the application of a reverse logistics phase in any disaster cycle would also be given.

4.1 Interviews and Contact Responses

The chosen questions intend to determine if in any humanitarian aid exists a post recycle or reverse logistics practice, after all danger and human suffer has passed.

1. What is the process to follow in any Natural or Man-Made disaster? Phases, stages.

2. Explanation of the In-Kinds cycle. Starting from receiving the In-Kinds (given by donors) up to the provision of them to the final beneficiaries.

3. Does the cycle ends once the last beneficiaries receive the In Kinds? Or what is the very last cycle provided by the organization?

4. After given the In Kinds to the last beneficiaries, what is the follow up given to those products.

5. Is there any organization focusing on recycling the brought materials?

6. How long does an organization last in action on the disaster zone? Once all is back to normality.

7. Are there logisticians working full time by your organization? How necessary are they for the success of the distribution of In-Kinds to the disasters zones?

8. Under your experience, How does the oversupply of goods is handle? What happened with all those items?

9. When does any humanitarian organization responsibility ends in any Natural or Man-Made disaster?


While intending to make the interviews to different humanitarian organizations in Switzerland, such as Helvetas.ch their answer was not to respond to the questionnaire due to the core of their organization which is not a Humanitarian Relief Organization.

“Dear Monica Calleros
Thanks for your e-Mail. As HELVETAS is not a Humanitarian Relief Organisation we are not able to answer your questions. I apologize. I assume that the “Swiss Humanitarian Aid Unit - SHA” is more the kind of organisation you are looking for”
(N. Brechbühl, personal communication, 2011)
Then later and as proposed by Helvetas, the authors contacted the Swiss Humanitarian Aid Unit (SHA), without any successful response (SHA, personal communication, 2011-04-13)

It was also contacted the Swiss Solidarity Organization (Glückskette) with a very positive attitude towards answering the interview, but since they are dedicated to only collect the funds to send to the disasters zones, they were not interview material for this research (F. Bollmann, personal communication, 2011-04-28)

Some other Swedish organizations seemed not to be willing to participate and not interested to answer the interview. These organizations were:

*Plan Sverige, Lions, LäkarmaisionenRöda korset, Unicef, Svenska kyrkan, Läkare utan gränser.*

There was also another contact to a Swiss organization called: *helpforchildren.ch* in charge of bringing support to people in Moldavia. Unfortunately for the focus of this research, they execute their humanitarian relief in a regular base, not under natural or man-made disaster relief operations. Therefore, their participation was taken only as explanatory. However, they do have a phase dedicated to use and reuse all the items brought to them and they also intend to create ways for self production of needed items.

Another contact was made to a Logistician Unit in Helsinki. As the guide for this research was based on what was learned under the Humanitarian Logistics course made on Helsinki, Finland at the Hanken University, an advice to one of our teachers Kovács G. was requested on May the second and she provided another contact of a student in Helsinki researching in Gatekeeping and Reallocating in Advance, which are some themes related to this investigation (G. Kovacs, personal communication, 2011-05-02)

Finally, after receiving all this information, the strategy was to reduce the number of questions from ten to three, leaving a fourth question open for any additional comments in case there was something they would be willing to add. This way was thought to be more reliable to receive more answered questionnaires back to the author’s source, since it appeared to be very difficult to find humanitarian organizations willing to participate.

SOS Barnbyar answered back and their response was this one:

*SOS Barnbyar*
SOS barnbyar was one of the organisations that answer our question for this thesis. This was made via mail, since they didn't have any time to meet the authors.

1. Do you know if there exists any record of the items and donations brought to the beneficiaries? Do you know what the beneficiaries do with them once they have received them?

SOS Children’s villages is a worldwide organization with 33,000 employees in 132 countries. In order for the business to work, we have strict procedures. Each country prepares its own budget, which then need to be approved at the regional and central level. All activities are reviewed annually by external firms. And by this follows that every cent that is transferred to the organization are by detailed documented and can be controlled.

The heart of the business is still our 500 children’s villages around the world. The detailed budget for the children’s village includes for example payments to the village mothers, food, clothing, transportation and activities, communication cost and administration. Each children’s village has an administrative department that continuously keep account of all expenses, which are accompanied by audit as above.

Since the business is managed by its own staff, it would be much easier to have control over how money is spent in comparison to the payments made to “external beneficiaries” that the question above alludes to.

2. Do you know if any of the brought or donated items have caused environmental disorders in the long term?

The construction of SOS Children's Villages, which is always made of locally hired construction company, has of course an impact on the environment. But on the same time there is an environment thinking in the SOS children's Village around recycling etc. The headquarter has over the recent years initiated specific environmental projects, which are open for funding by the contribution countries, such as investment in different types of energy options.
3. Do you know if it exists any recycle phase of the donated items brought to the beneficiaries once everything is back to normality?

The question is not strictly relevant to the SOS Children’s Village. Generally only money is donate, while purchasing in general takes place locally (food, equipment and furniture for children’s villages etc.).

4. Any extra comments

No extra comments were given by this organization.

The second interview was made to Mr. Ari Mäntyvaara at Red Cross in Finland. The authors of this thesis focused only on the question about the follow up given to all items sent to beneficiaries in each Relief of Aid. His answer was:

“Uhm, I don’t know, maybe beneficiaries do what they want with those items, once they have received them” (A. Mäntyvaara, personal communication, 2010)

4.2 Humanitarian Organizations Websites Analysis

Thus the information obtained by these interviews was not very extensive, the authors decided to supplement it with more secondary data taken by some humanitarian organizations websites. The objective is to look into their sites and find what has been done, report or advertised under Reverse logistics terms by their organizations.

A detailed chart shows the results found for each organization’s website. This chart would be explained next with the analysis of each of the organizations selected. This chart displays three concepts: their mission as an organization, it would explain if they present any Reverse Logistic Project under Humanitarian Aid, and in case they do not present any, then it would be selected a project related to sustainability or close to what Reverse Logistics.

Here a chart summarizing it and right after, the detailed information.
<table>
<thead>
<tr>
<th>Organization</th>
<th>Country</th>
<th>Reverse Logistics in donations</th>
<th>Other Sustainable Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helvetas</td>
<td>Switzerland</td>
<td>None</td>
<td>Yes</td>
</tr>
<tr>
<td>Swiss Solidarity - Glückskette</td>
<td>Switzerland</td>
<td>None</td>
<td>Yes</td>
</tr>
<tr>
<td>Help for Children</td>
<td>Switzerland</td>
<td>None</td>
<td>Yes</td>
</tr>
<tr>
<td>Red Cross</td>
<td>Finland</td>
<td>None</td>
<td>Yes</td>
</tr>
<tr>
<td>Plan Sverige</td>
<td>Sweden</td>
<td>None</td>
<td>Yes</td>
</tr>
<tr>
<td>Lions</td>
<td>Sweden</td>
<td>None</td>
<td>Yes</td>
</tr>
<tr>
<td>Läkarmissionen Röda korset</td>
<td>Sweden</td>
<td>None</td>
<td>Yes</td>
</tr>
<tr>
<td>UNICEF</td>
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<td>Svenska Kyrkan</td>
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<tr>
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<tr>
<td>SOS Barnbyar</td>
<td>Sweden</td>
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</tr>
</tbody>
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**Table 4.1 Humanitarian Organizations Web Sites Analysis**

None of the organizations mentioned above presented a Reverse Logistics project for items brought to the disasters zones via donations. This of course, does not mean that they do not practice it, but the lack of information would be taken as non presentation of projects on the needed field. However, they all have sustainable projects.

Next the information closer to our theme, would be taken from each organization’s mission and website.

**Helvetas Mission and Projects**

Vision is a just and peaceful world in which all human beings live in a self-determined way in dignity and safety, are able to satisfy their basic needs, have access to resources and services which are indispensable for life and take care of the environment.

Mission: We support impoverished and disadvantaged people and communities in developing and transitional nations who want to actively improve their living conditions.

We provide tangible help, and promote access to resources and services that are indispensable for life and thus contribute to overcoming the causes of poverty.
Through our developmental cooperation, we provide help for people to help themselves and assist them in strengthening the basis of their lives for the long term. Together with our partners, we apply ourselves to the protection, promotion and execution of social, economic, political and cultural rights.

In Switzerland, we apply ourselves to matters related to developmental politics and for foreign and economic policies characterized by solidarity in an increasingly networked world.

For its international programs, Helvetas's mission is: to collaborate in a participatory manner with and for the benefit of the poor and underprivileged society groups in the poor regions of development and transition countries; to further promote the exchange of knowledge and experiences between Switzerland and the partner countries as well as among the partner countries; to strengthen local structures and sustainable development and to promote human rights; to develop suitable measures that prevent or mitigate violent conflicts and contribute to mutually agreed and sustainable resolutions.

*Helvetas: Projects closer to Reverse Logistics is Humanitarian Aid.*

We not only provide practical assistance but also build communities’ capacities to claim their rights – to preserve their natural resources, develop basic infrastructure and have access to education. (Helvetas, 2011)

**Swiss Solidarity – Glückskette Mission and Projects.**

Swiss Solidarity assists people in emergency situations in Switzerland and abroad, regardless of cause and without any discrimination. Relief projects are carried out by experienced Swiss organizations associated to the foundation

*Swiss Solidarity – Glückskette: Projects closer to Reverse Logistics is Humanitarian Aid.*

Based on experience, the major part of the donations is used for renewal work (rehabilitation) and rebuilding. These are the most effective forms of relief in the long-term. Such projects are examined and approved by a special Project Commission (COPRO-INT + COPRO-CH) and monitored on-the spot during realization. (Swiss Solidarity, 2011)

**Help for Children Mission and Projects.**

The purpose is to support, assist and help people of all ages, especially for children and adolescents.
Help for Children: Projects closer to Reverse Logistics is Humanitarian Aid.

Construction, renovation, interior design for schools, nursing homes, soup kitchens, construction of aqueducts and bridges. (P. Garst, personal communication, 2011)

Red Cross Mission and Projects.

The International Committee of the Red Cross (ICRC) is an impartial, neutral and independent organization whose exclusively humanitarian mission is to protect the lives and dignity of victims of war and internal violence and to provide them with assistance.

Red Cross: Projects closer to Reverse Logistics is Humanitarian Aid.

The ICRC’s Water and Habitat Unit has five main areas of activity: Water supply, storage and distribution, Sanitation, waste management and environmental science, Restoration and management of electric power, Construction, repair and safety of structures, Provision of temporary community facilities.

Environment and energy: All humanitarian organizations face new environmental considerations that will increasingly influence the management of emergencies. Poorly planned movements of people may pose environmental degradation risks and create tensions within communities. The ICRC seeks to anticipate and address these issues in all its resettlement projects. The ICRC restores or maintains power supplies to essential installations such as hospitals, water treatment plants and water distribution networks, by repairing power distribution networks, generators, and hydroelectric plants.

Rwanda: using waste as a source of energy in prison. In Rwandan prisons, septic tanks were a growing health risk. Now, thanks to an ICRC project, human waste is being converted into biogas that is used to heat the ovens in prison kitchens. (Red Cross, 2011)

Plan Sverige Mission and Projects

Vision: Plan’s vision is a society that respect human rights and where all children can fulfill their dreams.

Mission: The most important thing is that children and adults in a community understand that they not are powerless, ant that they by them self can contribute to positive development and improve their own living conditions. Through long-
term self-help plan works to fight and create lasting improvements in children's quality of life in developing countries.

Projects:

The project for youth entrepreneurship and livelihoods for young people in Senegal is an innovative and constructive approach to finding solutions for young workers in the country. The project started in 2007 and involves youth groups working with young people (15-24 years) not attending school in Senegal. The majority of them are girls.

The projects have three main components:

- Access to financial services.
- Children and young people the opportunity to save and borrow small amounts, which represent the backbone of the project. Funding is essential to build a small capital for investment in business activity and improve the economy at the individual and household level.
- Training in life skills, employment and entrepreneurship. Courses include market analysis, entrepreneurship and enterprise are developed with young people themselves.

Ability to start small-scale business and create individual business plans (Plan Sverige, 2011)

**Lions Mission and Projects**

**Vision:** "Supporting the efforts Lions clubs around the world doing both in the local area and around the world by pursuing important humanitarian project."

**Mission:**
We provide sight. By equipping hospitals and clinics, training doctors, nurses and other health care, giving medicine and raise awareness of eye disease, Lions are working towards their goal that everyone can see.
We support youth. Lions help young people to mature into good citizens by building schools and youth centers, buying computers and medical equipment, and support the vocational training centers and Lions Quest.
We provide emergency assistance. Together, LCIF and Lions helps community's after natural disasters by meeting immediate needs such as food, water, clothing and medicines, and help with long-term reconstruction.
We combat disability. The Foundation helps Lions disabilities to live more independent, productive and meaningful lives.
We serve. Lions continue to serve those who are most in need, both on a local and a global level (Lions, 2011)

**Läkarmissionen Mission and Projects**
Vision: We are going through the development and effective ways to support vulnerable people’s willingness and ability to change their living conditions.

Mission: We are going from a rights perspective, poverty and contribute to sustainable development in our priority areas. We are also providing information to engage with people on Läkarmissionen vision.

Projects:
When a disaster occurs, it is important that help will arrive quickly. Medical Missions have a reliable network of churches and organizations worldwide to help us to help. Now the situation is acute in East Africa!

In eastern Africa, drought ruthless. People are dehydrated and die unless they get water. Läkarmissionen works with two partners that are in place, IAS and Christian Aid.

Floods in Pakistan and the earthquake in Haiti are two other examples where the needs were, and are huge. In the beginning, food, clean water and opportunities for a temporary residence is most important, then it comes a long phase of reconstruction.

When Läkarmissionen is involved in a disaster, we are always given to be there to help for a long time (Läkarmissionen, 2011).

**UNICEF Mission and Projects**

We are fighting for all children around the world. In office corridors, slums, refugee camps and remote villages, we do our utmost to every kid should have their rights respected. We are negotiating with decision makers to get them to give priority to children and we help with the basics during the children’s lives - from the womb and into adulthood. We mainly work in six priority areas:

- We help children to survive and grow
- Advocacy - in Sweden and in the world
- We help children in war and disaster
- We are fighting to stop the AIDS epidemic
- We are fighting for the right of children to attend school
- We are fighting to protect to protect children from violence and abuse

Project:
In Somalia, takes UNICEF in collaboration with the government and municipalities a holistic approach to children’s situation. Here are some examples of what we do:

Water. We are building new or renovating existing water systems, replacing old rusty again silted pipes and cleans water sources and wells.

We educate municipal and local people so that they can develop, operate and manage the local water system.
We spread knowledge about the importance of good hygiene, so that everyone knows how to protect themselves against infectious diseases.
We are providing schools and health centers with basic toilets and to wash their hands.
We ensure that teachers educate their students about sanitation and hygiene (UNICEF, 2011)

**Svenska Kyrkan Mission and Projects**

Projects:
Water and sanitation is important.
Besides food and shelter includes clean drinking water and good sanitation to what ACT Alliance priorities in disaster situations.
We support all types of emergency management, but the Swedish Church’s International work has a particular responsibility for a conscious, so called psycho-social work in the ACT Alliance.
This means that when we send personnel to a disaster response, they have a special knowledge about how to get people to become involved in the work. Swedish Church have trained local staff, which in turn will try to give support to the stricken people they meet (Svenska Kyrkan, 2011)

**Läkare utan gränser Mission and Projects**

Läkare utan gränser is a medical humanitarian organization that saves lives and alleviates distress in which we are most needed. We assist people affected by crises, wars and natural disasters regardless of politics, religion or ethnicity.
Projects:
Läkare utan gränser (Médecins Sans Frontières) provides humanitarian medical relief to people affected by armed conflicts, crises, epidemics and natural disasters and to people who lack health care due to social or geographical isolation.
MSF’s has projects in over 60 countries around the world. In a year, MSF sends out approximately 2500 international field workers for a total of 6500 missions. Along with about 25 000 local employees engaged in these activities in the field (Läkare utan gränser, 2011)

**SOS Barnbyar Mission and Projects**

Vision: All children should grow up in a safe environment with support from family and community.
Mission: We raise funds in an efficient and transparent manner to support SOS Children's Village work to give all children a happy childhood.
Projects:
SOS Barnbyar in the Central African Republic
The first SOS Children’s Village, in the capital, Bangui, was inaugurated in 1992. Since then, even a village built in Bouar. The village was built in memory of Astrid Lindgren and now plans a third village in the country in honor of the famous children’s book author. SOS Children’s Villages also operates a youth accommodation, two preschools, two elementary schools, two medical clinics and two social centers in the country. All activities are related to children’s villages, but it is also open to children from the neighborhood (SOS Barnbyar, 2011).


5 Analysis

5.1 Scrutiny

After the Interview Responses were received and the Analysis of the Humanitarian Organizations Websites was made, it was attested an absence of a Reverse Logistics Phase of the items donated to the last beneficiaries. However, increasing the interviewed sample would have brought more accurate results.

The extent up to what the studied humanitarian organizations embrace ends exactly when the prevention phase is accomplished. There exists no follow up of the items donated by the international community once the natural disaster and the prevention cycle have passed. These items are tracked only up to the moment when the last beneficiaries receive them.

The purpose of this thesis has been achieved. It has been determined up to which stage ends the Humanitarian Organizations participation. It has been demonstrated that they lack a Reverse Logistics Phase of the items sent by donors through Humanitarian Organizations.

This finding opens up a niche for the authors of this thesis to suggest some Reverse Logistics alternatives. It is then suggested an additional Reverse Logistics Phase to the Disaster and Emergency Assistance Cycle mentioned by Safran (2003) (cited in G. Kovacks, personal communication, 2010).

5.1.1 Analysis of the Interviews and Contact Responses

The interviews collected confirm a lack of knowledge of donations. By analyzing the answers it could be said that there exists no follow up of those items. However, the responses reveal a sustainable contribution by the execution of certain environmental projects.

Unfortunately, the answers received do not give precise responses. They are vague, and they intend to support what the organization in question actually performs. Perhaps would have been better not to apply an open questionnaire, this way the organizations would have answer with a sharp yes or no if they practice any reverse logistics in every relief of aid.

For the interview to the Red Cross, since it was a visit done and support by the Hanken University in Finland, questions were not previously developed. So this could be another reason for not obtaining more information of the subject. However, just one question was made and in comparison with the other interviews, this one made to the Red Cross was the only one which went straight to what we wanted to investigate. The answer was equally straight, without double
thinking, lacking any kind of hidden feelings nor trying to protect the prestige of the organization at all. It was a short an immediate response, which coming for such a large organizations like the Red Cross, supports then our belief of the missing part of Reverse Logistics in any Relief of Aid.

The person interviewed did not have idea of the follow up of those items. Their mission was already fulfilled. Therefore, what the beneficiaries do with what they received, once they are out of danger, is their own responsibility. This response leaves place to start thinking on a possible reverse logistics cycle from which all would receive benefits instead of negative consequences. This of course requires more responsibility of all the organizations in the field, and with the responsibility, more task, activities and work to do.

5.1.2 Analysis of the Humanitarian Organizations Websites

It is remarkable that after analyzing each organization’s websites, none of them offer any information related to recycling the donations brought to the disaster zones. It could not be found in a more precise way any reverse logistics process in any relief. However, long term reconstruction and sustainable programs were in each of them positive found. These sustainable programs focus mostly in health, reconstruction, water, sanitation, among other themes.

The existence of these programs, even though they are related to make of the disaster zones a sustainable environment, they are not tracking exactly the proposition of this research, which is finding a follow up of in-kinds brought to natural disaster zones.

As there is no follow up, there is no information of how a reverse logistics process is applied. This leaves room for the authors of this thesis to suggest some alternatives to pursue, taking them just as propositions to work in the field and they would need the support of all actors in the scene. These suggestions of course, could be also deeper studied by other authors interested on this topic as well as for further studies under a Post Doctoral Research.

5.2 A Proposal for a Reverse Logistics Phase in Humanitarian Aid: Our Contribution

5.2.1 Donations Identification and Reallocation Alternatives

Humans have the responsibility of not creating unnecessary waste. But how does this belief could be applied when international players in a relief of aid, participate by sending extreme huge amounts of not needed and expired supplies?
When it comes to equipment needed in a humanitarian relief of aid, it is not congruent to send tons of in-kind donations, when trucks and vehicles within the zone are the necessary ones to distribute the in-kinds that have been already landed there.

Some other common ways to hinder a relief of aid are:

- Sending non needed materials or not adequate for a specific mission.
- Sending more in kinds when the ports of entrance are already turned as Bottlenecks. In-Kinds cannot be unloaded.
- When there is no possibility of taking down the volunteers to the zone.
- When the same item is received in huge amounts, while other items are completely forgotten.
- When items are sent separated, and to put them all together, it becomes not possible due to the lack of the whole parts together.

All these issues related with waste, could be measure in different ways:

- At Ports of Entry
  - Due to unsolicited goods sent by donors.
- In warehouses and local distribution centers, waste can be:
  - Goods which cannot be stored due to oversupply.
  - Perishable Goods disposed due to defects or inappropriateness.
- By the meanings of Transportation:
  - Due to accidents, lack of infrastructure or theft
- In the delivery phase waste can be measured as:
  - Goods lost due to theft or destruction by third party
  - Goods lost due to accident
  - Goods left due to shipping restrictions
- At the Last Mile:
  - Goods which are unused, undelivered or damaged.
- At the end of the relief operations:
  - Unused goods in need of disposal
  - Unused goods in need of repackaging for storage
  - Unused goods in need of relocation / redistribution
- In terms of costs waste costs are added to:
  - Distribution costs
  - Inventory Holding

If these and other problems are presented, all the human relief effort sent by the world to fulfill one specific goal starts being seen as a waste of productivity: waste of valuable time and waste of vital resources. Bringing incinerators to the relief of aids has become part of the Logisticians kits in order to release the ports of entrance of unneeded donations giving place to a faster relief.
This “waste” problematic is faced in several missions, making necessary and urgent the implementation of suitable solutions sustain by the absolute international relief support players involved in the chain. Consequently, this topic inspires a foundation of a Specialized Waste Management over time, as well as Waste Flexibility Visualization. This would improve the ability to reuse, store and separate by criticality, and also when necessary, dispose unused goods.

Some alternatives are proposed for the better oversupply management on Humanitarian Relief of Aid. These alternatives are:

![Figure 5.1 Avoiding Waste. (M. Calleros, personal communication, 2010)](image)

All these alternatives deserve further research since they all could be applied in future natural or Man-Made disasters and bring more benefits to the citizens of the world.

5.2.2 **Reallocation to Second in Need**

So far has been explained the way the in-kinds are brought to the last beneficiaries. In order to reach them, several processes need to be done. Each of those steps requires a lot of effort, financial assets, coordination, time investment and participation of each actor in the chain. So once the in-kinds have been brought to the conflict zones, those items should not be eliminated as waste, because that would mean that everything that has been invested was used for nothing. Plus, transporting all those donations from one side of the world to other is not environmental friendly.

Here comes our alternative to be further studied by anyone interested on the topic: Reallocation to Second in Need.
As written before, most of the natural disasters occur on developing countries. Therefore, those in-kinds could not only be used by the beneficiaries of that specific natural disaster, but also for the second people in need within that specific country.

This alternative suggests that all effort taken to transport in-kinds to the conflict zone should have a real end beneficiary, either a last beneficiary under a natural disaster or a last beneficiary under natural circumstances.

The challenge of this alternative relies on the openness of the donors to allow their donations to be used in the same country for second in need, this just in the case, the last beneficiaries of natural disasters have received exactly what they need. In case donors accept this clause, then some other political formalities would need to be determined and changed. This implicates changes in donations clauses and politics that are already fixed internationally. It seems like a bureaucratic task to perform but it could be applied with a real information management. This alternative would embrace human beings who are actually living in precarious conditions.

### 5.2.3 Reallocation to UN Warehouses

As in the previous alternative, this one proposes a stock of every oversupply in any of the UN Warehouses. This way, in case some other natural disaster appears, the allocation of these resources would reach in a shorter time last beneficiaries.

In every relief of aid, there are constant priority items (Tier 1 and Tier 2) which in our point of view could be hold in UN Warehouses in case an oversupply is presented. This alternative would reduce the human beings risk of life.

### 5.2.4 Pre-Analysis of Donations and Strategic Allocation of Items

Every step in the commercial logistics and supply chain management starts with a previous analysis of what is needed. It is our suggestion to perform the same way than commercial logistics, but under humanitarian terms.

This proposition requires exhaustive team work and coordination, because before sending any of the required items; each organization, country, government and in general any player in the field should advice to a central hub -which in this case could be the country in danger- the items that they want to donate.

Volunteers in the damaged zone could then decide the items to be received, giving priority to the countries closer to the natural disaster to produce a faster relief of
aid. This way would allow a better control of the supplies donated and it would certainly reduce the oversupply.

Unfortunately, there are always a lot of political and cultural issues involved in each relief of aid, which would perhaps challenge this proposition.

To make it even more challenging and in order to avoid Bottlenecks at the ports of entrance, it is also suggested to select a strategic hub outside the country in danger, but enough close to be able to distribute the in-kinds.

This alternative besides including a political challenge, includes a lot of paper work due to customs clearance in two countries or in two different hubs, but as mentioned before, these alternatives are only suggestions and are open to more research.

5.2.5 Reverse Logistics

As for the last propositions, the one that fulfills a more palpable panorama is this one based on Reverse Logistics.

The problematic faced in each relief of aid are very common. There is always a lack of Coordination, an oversupply of no needed items, the appearance of Bottlenecks due to extreme flow of items, lack of ideal transportation systems to the last beneficiaries, among some other issues. But what is totally certain is that at the end of each relief of aid, donations are finally given to the last beneficiaries.

Under the humanitarian point of view, once the beneficiaries are out of suffer and the disaster situation is back again under control, the Humanitarian Logistics have then accomplished their main objective. However, the cycle should not be count as over. Here is exactly where the Reverse Logistics alternative is totally appropriated proposed.

Let’s assume that the items have been already used by the beneficiaries. The prevent phase of the Disaster Management Cycle has been set as well. A period of tranquility is lived by the whole community, but what has happened with the donated tents, jerry cans and tarpaulins left in the zone? What about the whole waste created by the volunteers and people working on the disaster zones, such as: detergents, plastic containers, mosquito nets, etc? Environmentally talking, is the country really back to what it previously was?

Every single item given to the beneficiaries has a source of production. It is our belief that once the item is no longer used, must be then sent back to its original source, meaning with this to follow a reverse process back called Reverse Logistics.

By employing Reverse Logistics, less creation of waste would appear, due to the recycle of those used items. The financial assets collected for the relief of aid could also be used to send back to the original sources all recyclable items, as well as
those items which need to be destroyed. That would be the last part of the Disaster Cycle.

Following this path would really get back life to normality and it would perhaps make it a more sustainable environment for the beneficiaries. It is then proposed to employ a Reverse Logistics phase as a final phase of the Disaster Management Cycle, containing a refurbishing, recycling, cannibalization, repair and remanufacturing process to reduce the new creation of waste.

**Refurbishing** the used donations by maintaining them in a good usable mode, could allow them to be reused and not to be left behind as not utilizable items. **Recycling** the donation’s materials into other items would diminish the creation of waste. **Cannibalizing** or removing the parts which could be used in other devices, would as well moderate the excess of waste creation. **Repairing** parts to maintain a working device would also prevent the acquisition of new ones. **Remanufacturing** the obsolete components would improve the performance of the non destructible donations.

It could happen that some of these stages are not applied due to the nature of the item. However, whenever any of these propositions could be developed, the creation of new waste would be **reduced** and that is exactly the aim of Reverse Logistics in the Relief of Aid.

Next figure shows how the Reverse Logistics Phase could be added to the Disaster Management Cycle.
It is also proposed to begin the collection of items with an *Environmental Purchasing/Donation Aware*. Items sent to disaster zones have already a level of importance (Tier 1 or Tier 2). The Tier 1 items are already stocked in UN Warehouses and some of them have already an official supplier. Therefore, Humanitarian Organizations, Governments, volunteers, and people involved in the chain, could aware the international community to collect and send recyclable items. This would at the same time produce environmental awareness of the world and it could be the start for the people to consume environmental items in their daily lives.
Reverse Logistics in Humanitarian Aid is a theme that offers huge possibilities to explore. The more Logisticians research on this topic, the more complete support would be given to any relief of aid.

This alternative is offered to be deeper studied perhaps under Doctoral Studies. It has a lot of potential to be applied in future natural disasters. It also needs the support of researches in different fields to strengthen the core idea of this proposition. That is the case of environmental management knowledge as well as other engineers and researches in different fields.

This proposition was the motor for the realization of this thesis, and it is still the wish to find an applicable environmental and sustainable solution to all natural disasters.

5.2.6 Incineration Process

Finally, if any of the last alternatives is usable, then the incineration of all the oversupply should be applied. The proposition here is to perform the incineration with the proper meanings in the disaster zone, but when no proper meanings are available, then by employing a Reverse Logistics Process, bring the item back to their sources and there realized the incineration process. Otherwise, the environmental damage would not be decreased.

5.3 Shortcomings. Improvements that could be performed

Increasing the participation’s sample by receiving the response of a minimum of fifty humanitarian organizations would have provided more accurate results.

Finding valuable participation was difficult to get. Possible causes could have been related to:

- Lack of time of the humanitarian organizations to answer each of the questions, or
- Language restrictions of both parties: interviewer and interviewee, or perhaps
- Avoiding our questions was the easy way to remain as a well known Non Profit Organization, without showing off their lack of a reverse logistics phase or the method selected to perform the interviews.

Therefore, some improvements could have been done, such as:
• Making contact to humanitarian organizations promising their response be saved under an anonymous one.

• Contact should have been done by employing diverse techniques such as email, telephone, video conference and face to face. This way the organization’s contribution would have been larger.

• Amplifying the humanitarian organization’s countries chosen for this study.

• Since the spectrum to investigate is extremely broad to be covered in only one thesis, the emphasis would have been given to Non-Destructive Items brought to the disaster zones and its consequences.

• Moreover, the track would have been done to only one specific item, such as: plastic, water tarpaulins, cans, tents.

5.4 Further Research Contribution

There exists no secondary data on this topic. This small amount of tangible information opens up a broad spectrum for any logistician to focus in diverse subjects related to humanitarian logistics.

The possibilities are huge for anyone interested on making of this field a more explored and structured one. Humanitarian Logistics field deserve, for the benefit of our own communities, to be deeper studied in order to develop the field with more effective and improved methods for future worldwide natural or man-made disasters.

As in other investigations, the authors of this thesis could found the need for further research in other topics related to Humanitarian Logistics Aid. For instance, the challenges faced by humanitarian logistics stakeholders due to the lack of coordination and cooperation. The organizations involved on the field, sometimes rival each other instead of playing a coordinated team work. This of course leaves place to study the reasons and improve the work in field.

The reallocation of donations is a topic, which would bring uncountable benefits to people in need. Organizing and controlling donations from the beginning would also increase the level of coordination among all the actors. Therefore, researching deeper on the alternatives given on this investigation would provide a better guide for future disasters.

There are also other extra factors that intervene with the right relief of aid, such as cultural and religious aspects. These topics are also recommended for further research, due to the importance when it comes to relief people out of suffer.
As it has been mention, the lack of effective use of technology produces also some lack of coordination on the field. Consequently, logisticians wanting to provide support under this topic would be welcome to analyze and propose better ways to handle IT systems when disasters are presented.

Everything that is measure can be improved, then performance measurements under the humanitarian logistics point of view are in the need to be deeper studied, since every stakeholder on the field reports their contributions in different ways and there has no been feedback from people affected by crises.

Here some of the themes proposed to be further studied:

- Donors participation- Making of it a Green Purchasing or Donation Process and also modifying the way the donations are handled up to date.
- NGOs Responsibility-Analyzing up to what moment finishes the NGOs participation on the natural disasters, or maybe creating also NGOs focusing on giving back to the source the items brought to the scenes.
- Gate Keeping Processes and Distribution of Items-In order to reduce the chaos in scene, organizing a pre-selection of items before landing on the natural disaster zone.
- Oversupply of Items followed by Bottlenecks-How to diminish this issue, some alternatives.
- IT systems-The creation of trustable systems that could be applied on a relief of aid.
- Challenges on the application of Reverse Logistics in Human Aid.
- As well as getting deeper into the alternatives proposed for a more sustainable relief of aid.
6 Conclusion

It has been shown that sending donations to the last beneficiaries is a very challenging task. Furthermore, to find a sustainable way to track those items up to their last use represents a defiant challenge.

Five alternatives were suggested to handle donations sent to each relief of aid to avoid the creation of new waste. Among those alternatives, the one based on Reverse Logistics was suggested to be the last phase of the Disaster Cycle.

This proposition would track those items and would also send them back to their original source by recycling them, refurbishing them, repairing them, remanufacturing them or by the use of cannibalization.

Unfortunately, the results of this investigation demonstrated that the extent up to what Humanitarian Organizations have applied a Reverse Logistics phase of items donated to the last beneficiaries is null.

This result was obtained by studying different disaster cycle approaches as well as by the application of interviews to small, medium and large humanitarian organizations. Their websites were also analyzed and as a final result, it has been demonstrated a total absence of Reverse Logistics of the items sent to every Relief of Aid.

The consequences of not applying a follow up of the items donated would bring in the medium term negative environmental consequences for the last beneficiaries’ countries as well as for the rest of the world.

This fact has a significant impact on the Humanitarian field. It leaves a clear niche to be investigated for future researchers since Reverse Logistics is not yet a well explored topic under the Humanitarian Field.

Reducing what we use under any circumstances, would diminish the creation of new waste. This aims to more waste management awareness to all people involved in any relief of aid.

Reverse Logistics under Humanitarian Relief of Aid is a topic with a strong impact for future research. It leaves room for more logisticians to research deeper on how feasible would be to apply this proposition.
7 References


## 8 Appendix

### Annex 1. OECD and OECD-DAC membership

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<tr>
<th>OECD members and their date of membership</th>
<th>OECD-DAC members and their date of membership</th>
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<td>Korea: 12 December 1996</td>
<td>Norway: 1962</td>
</tr>
<tr>
<td>Luxembourg: 7 December 1961</td>
<td>Portugal: joined in 1961, withdrew in 1974 and</td>
</tr>
<tr>
<td>New Zealand: 29 May 1973</td>
<td>Sweden: 1965</td>
</tr>
<tr>
<td>Poland: 22 November 1996</td>
<td>United Kingdom: 1961</td>
</tr>
<tr>
<td>Portugal: 4 August 1961</td>
<td>United States: 1961</td>
</tr>
<tr>
<td>Spain: 3 August 1961</td>
<td></td>
</tr>
<tr>
<td>Sweden: 28 September 1961</td>
<td></td>
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<tr>
<td>Switzerland: 28 September 1961</td>
<td></td>
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<tr>
<td>Turkey: 2 August 1961</td>
<td></td>
</tr>
<tr>
<td>United Kingdom: 2 May 1961</td>
<td></td>
</tr>
<tr>
<td>United States: 12 April 1961</td>
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</tbody>
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9 Figures and Tables

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Table 4.1 Humanitarian Organizations Web Sites Analysis
10 Glossary

ADRA Adventist Development and Relief Agency
CARE Cooperative of Assistance and Relief Everywhere
CLSC Closed Loop Supply Chains
CRS Catholic Relief Services
DAC Development Assistance Committee
E-Waste Electronic Waste
FEWER Forum on Early Warning and Early Response
GHD Good Humanitarian Donorship
ICRC International Committee of the Red Cross
LCDs Local Distribution Centers
MSF Medicins Sans Frontieres
NGO Non Governmental Organization
OCHA Office Coordination Humanitarian Assistance
ODA Official Development Assistance
OECD Organization for Economic Cooperation and Development
OXFAM Oxford Committee for Famine Relief
SHA Swiss Humanitarian Aid Unit
UNHCR-UN High Commissioner for Refugees
UN United Nations
WEEE Waste Electrical and Electronic Equipment