

Mainstreaming the environment within humanitarian operations: Identifying key factors for effective implementation of a green approach to procurement within the International Federation of the Red Cross

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Abstract

Each year millions of people receive emergency relief items from humanitarian organizations following disasters and crises. While significant time and resources have been invested in identifying the needs of affected populations and how to address those needs, significantly less focus has been given to environmental impacts of these response operations. These impacts can result in substantial negative outcomes, causing harm to the same populations humanitarian organizations are attempting to serve. In response, humanitarian organizations have developed environmental mainstreaming approaches to mitigate these unintended impacts. However, academic literature has given little focus to environmental impacts of humanitarian operations or their prevention. While there are several entry points to investigating these environmental impacts and possible interventions, this thesis examines procurement of emergency relief items, with a specific purpose of exploring implementation of a green approach to procurement. These research aims were pursued through a case study of the International Federation of the Red Cross (IFRC), and relied on collection and analysis of literature and expert interviews with Red Cross procurement practitioners and private-sector suppliers. Results indicate several key factors considered by these experts as needed for implementation of a green approach to procurement. Findings include several implications for realizing organizational and operational change; and additionally identify potential roles a supplier can play in a move toward green procurement. While practical implications are directed toward implementation of an environmental mainstreaming approach within the IFRC, findings identify some overlap with existing studies, which could indicate relevance within a greater humanitarian context.

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ACRONYMS

ERU	Emergency Response Unit
ICRC	International Committee of the Red Cross
IFRC	International Federation of Red Cross and Red Crescent Societies
NGO	Non-governmental organization

DEFINITIONS

Disaster – a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community’s or society’s ability to cope using its own resources. Though often caused by nature, disasters can have human origins. (International Federation of the Red Cross (IFRC), 2017h)

Environment – the physical, chemical and biological surroundings in which disaster-affected and local communities live and develop their livelihoods. It provides the natural resources that sustain individuals, and determines the quality of the surroundings in which they live. (The Sphere Project, 2011)

Environmental mainstreaming - the active, timely and systematic inclusion of environmental concerns as an inter-sectoral issue at all stages of humanitarian action with the aim to protect lives, livelihoods, and sustainable resource management. (UNEnvironment & United Nations Office for the Coordination of Humanitarian Affairs, 2014)

Green Procurement - the purchase of goods, services and capital items, as well as the contracting (hiring or renting) of equipment, facilities, consultants or services that minimize environmental impacts throughout their lifecycle when compared to goods, services and works with the same primary function that would otherwise be procured. This means considering the costs of securing raw materials, and manufacturing, transporting, storing, handling, using and disposing of the product. (Adapted from European Commission (2016), IFRC (2017d) and (International Institute for Sustainable Development, 2017).

Green Response - the Green Response approach seeks to ensure a minimized adverse impact on the environment resulting from the emergency response systems applied. Green Response is very much a change of mind-set prior to and during the response phase, where traditional disaster response operations are supplemented with consideration for the environment and ecosystems. Therefore, Green Response is the active terminology for environmental mainstreaming within the International Federation of the Red Cross (IFRC). (IFRC and Swedish Red Cross, 2017)

Greening – inclusion of environmental considerations within an organization and its processes, such as green supply chain management. (Sarkis, Spens, & Kovács, 2012)

Humanitarian logistics - 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. (Thomas and Mizushima (2005) as cited in Jahre, Pazirandeh, and Van Wassenhove (2016)

Life-cycle and life-cycle assessment - the consecutive and interlinked stages of a product or service system, from the extraction of natural resources to the final disposal. Life-cycle assessment is a systematic set of procedures for compiling and examining the inputs and outputs of materials and energy and the associated environmental impacts directly attributable to the functioning of a product or service system throughout its life cycle. (International Organization for Standardization, 2006)

Mitigation - any sustained effort undertaken to reduce a hazard risk through the reduction of the likelihood and/or the consequence component of that hazard's risk. In other words, mitigation seeks either to make a hazard less likely to occur or to reduce the negative effects if it were to occur. (Coppola, 2011)

The Movement – The International Red Cross and Red Crescent Movement is the world's largest humanitarian network. The Movement is neutral and impartial, and provides protection and assistance to people affected by disasters and conflicts. The Movement also works in cooperation with governments, donors and other aid organizations to assist vulnerable people around the world.

The Movement is made up of nearly 100 million members, volunteers and supporters in 190 National Societies. It has three main components:

- The International Committee of the Red Cross (ICRC)
- The International Federation of Red Cross and Red Crescent Societies (IFRC)
- 190 member Red Cross and Red Crescent Societies

The ICRC, the Federation and the National Societies are independent bodies. Each has its own individual status and exercises no authority over the others. (IFRC, 2017e)

Non-food items - When people have lost everything in a disaster, they require basic and culturally appropriate goods and supplies to maintain their health, privacy and dignity, to meet their personal hygiene needs, to prepare and eat food and to achieve necessary levels of thermal

comfort. These might include clothing, blankets, bedding, stoves and kitchen sets, water containers and hygiene products. (IFRC, 2017h)

Preparedness - the goals of disaster preparedness are to know what to do in a disaster's aftermath, know how to do it, and be equipped with the right tools to do it effectively. Preparedness minimizes hazards' adverse effects through effective precautionary measures that ensure a timely, appropriate, and efficient organization and delivery of response and relief action. (Coppola, 2011)

Procurement - the purchase of goods, services and capital items, as well as the contracting (hiring or renting) of equipment, facilities, consultants or services. Note: The focus of this research will limit itself to the activities of specifying and purchasing goods as well as supplier selection. (IFRC, 2017g)

Pre-positioning – the holding of critical material, 'stock', at strategic locations by organizations in preparation to respond to emergencies. (Logistics Cluster, 2015b)

Red Cross Emergency Response Unit (ERU) - teams of trained technical specialists, ready to be deployed at short notice, using pre-packed sets of standardized equipment. Current ERUs include: logistics, IT & telecommunication, water & sanitation (multiple types), basic health care, referral hospital, rapid deployment hospital, relief, and Base Camp. (IFRC, 2017b)

Reverse logistics - is concerned with closing of the supply chain loop through activities concerning how materials are consumed back into the system through recycling, remanufacturing, reclamation, refurbishing, repackaging, returns processing, salvage, and landfill. (Peretti, Tatham, Wu, & Sgarbossa, 2015; Sarkis et al., 2012)

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1 INTRODUCTION

International Federation of the Red Cross (IFRC) operations deliver assistance globally to populations affected by disaster. In 2015, 4.3 million people received non-food emergency relief items (NFI) from the IFRC (IFRC, 2015). This included items such as tarpaulins, jerry cans, kitchen sets, mosquito nets and hygiene kits, designed to meet individuals' basic needs following a disaster. While significant time and resources have been invested in identifying the potential needs of affected populations and how to address those needs, significantly less focus has been given to environmental impacts of these response operations, or what is being done, or could be done, to negate them (IFRC, 2013; Sarkis et al., 2012; Srinivas & Nakagawa, 2008).

Environmental impacts associated with humanitarian response operations vary and include emissions to water, air and land, and resource usage (IFRC and Swedish Red Cross, 2017). In connection to the emergency relief items supplied by IFRC and Red Cross National Societies, primary impacts are caused by waste management issues including the improper incineration and disposal of hazardous and other materials (IFRC and Swedish Red Cross, 2017; Srinivas & Nakagawa, 2008). These impacts to the environment can result in substantial negative outcomes, causing harm to the same populations they are attempting to serve (Barrett, Murfitt, & Paul, 2007).

These negative impacts are in direct conflict with existing humanitarian commitments including the *Humanitarian Charter* and its first protection principle to avoid exposing people to further harm as a result of your actions (The Sphere Project, 2011, p. 28). The *Core Humanitarian Standard on Quality and Accountability* and *The Code of Conduct for the International Red Cross and Red Crescent Movement and Non-governmental Organizations (NGO) in Disaster Relief* additionally underscore the necessity of identifying and acting on inadvertent negative effects on the environment (The Sphere Project, 2011).¹ The IFRC additionally notes commitment to the Sendai Framework for Disaster Risk Reduction 2015-2030, which recognizes the environment as a defining factor in either increasing vulnerability or resilience

¹*The Code of Conduct for the International Red Cross and Red Crescent Movement and NGOs in Disaster Relief*, Principle 8: Relief aid must strive to reduce future vulnerabilities to disasters as well as meeting basic needs', 'We will pay particular attention to environmental concerns in the design and management of relief programs. We will also endeavor to minimize the negative impact of humanitarian assistance, seeking to avoid long-term beneficiary dependence upon external aid.'

Core Humanitarian Standard on Quality and Accountability, Commitment 3: Communities and people affected by crisis are not negatively affected and are more prepared, resilient and less at-risk as a result of humanitarian action. Commitment 9: Communities and people affected by crisis can expect that the organizations assisting them are managing resources effectively, efficiently and ethically.

within communities (United Nations, 2015), and the implementation of the 2015 Paris Agreement on Climate Change (IFRC, 2016).

In consideration of potential environmental impacts caused by their operations, and their commitment to save and protect lives, organizations like the IFRC have started to act to mitigate and prevent these unintended impacts, such as those attributed to relief items, through inclusion of environmental concerns at all stages of humanitarian action. This is referred to as environmental mainstreaming, (IFRC and Swedish Red Cross, 2017; UNEnvironment & United Nations Office for the Coordination of Humanitarian Affairs, 2014). and includes weaving considerations for the environment into all operational functions, including logistics, whose functions constitute approximately 80% of humanitarian operations (Van Wassenhove, 2006, p. 204).

While there are many logistics functions, procurement is noted to have impact on nearly every aspect of the humanitarian supply chain (Logistics Cluster, 2015a). Decision making during the procurement process, such as which suppliers to use and what items to purchase, have environmental implications spanning from raw material extraction and manufacturing all the way to possible impacts of the products in the field, including maintenance and disposal. However, little focus has been given to environmental impacts of humanitarian logistics functions within academic research, including how to prevent them (Battini, Peretti, Persona, & Sgarbossa, 2016; Eng-Larsson & Vega, 2011; Peretti et al., 2015; Sarkis et al., 2012). Therefore, while there are several entry points to investigating environmental impacts and their interventions in the humanitarian sector, procurement of emergency relief items has been selected for the focal point of this research, with a specific purpose of exploring green procurement within humanitarian logistics.

1.1 RESEARCH QUESTIONS

Specifically, this thesis investigates implementation of a green approach to procurement within the Red Cross/Red Crescent Movement, and seeks to answer the following questions:

Do the IFRC and Red Crescent National Societies currently consider environmental factors in their relief efforts?

- *What environmental impacts are associated with emergency relief items in the field?*
- *Are environmental considerations currently included in procurement practice within the IFRC, including National Societies?*

How can the IFRC and Red Crescent National Societies effectually implement a green approach to procurement ?

- *What are perceived by humanitarian procurement practitioners and suppliers as key considerations for implementation of a green approach to procurement?*
- *What role(s) can a supplier play in adoption of green procurement practices?*

1.2 RESEARCH AIMS

The primary aim of this study is to identify key considerations for implementing an environmental approach to procurement of relief items to prevent environmental impacts caused or exacerbated by humanitarian response. It also aims to provide reliable and relevant information for the Red Cross and other NGOs regarding the inclusion of environmental considerations within their operations. In addition, this study aims to begin to address the existing gap in academic writing concerning environmental impacts of humanitarian response, with the goal of supporting humanitarian commitments, in particular the Protection Principle.

1.3 SCOPE AND LIMITATIONS

This study was developed following conversations with the Swedish Red Cross about possible research needs connecting their future environmental mainstreaming approach, Green Response, with the private sector. After initial exploratory research, a focus of green procurement was established, as this was an opportunity to investigate environmental impacts of humanitarian response, environmental mainstreaming, as well as the role of the supplier in greening.

Boundaries for this research were drawn to specifically focus on environmental impacts which occur in the field, in connection to items delivered by the Red Cross during immediate response to disaster. This confined the focus to pre-positioned non-food items and Emergency Response Units (ERUs), and their associated environmental concerns, such as excess packaging, recyclability, and disposal, which will be elaborated on in Section 4.1. While this research could be inclusive of other logistics functions, such as transportation and warehousing, an additional exclusionary boundary was drawn to further focus the research.

Finally, it should be noted that while this study operates within the context of the humanitarian supply chain and borrows concepts from the field of logistics, such as procurement, it does not concentrate on the semantics of the supply chain and underlying concepts, rather, the focus pursues procurement as an aspect of organizational preparedness for disaster response.

1.4 ORGANIZATION OF THESIS

The thesis is organized as described in Figure 1. Section 2 describes the context and case of the study. Section 3 describes the methodology used, specifically literature review and semi-structured interviews and their analysis. Section 4 presents a literature review of environmental impacts and green procurement within the humanitarian logistics context. Section 5 presents the results from interviews with both Red Cross and supplier informants. This is followed by the discussion of results in Section 6, and concluding remarks in Section 7.

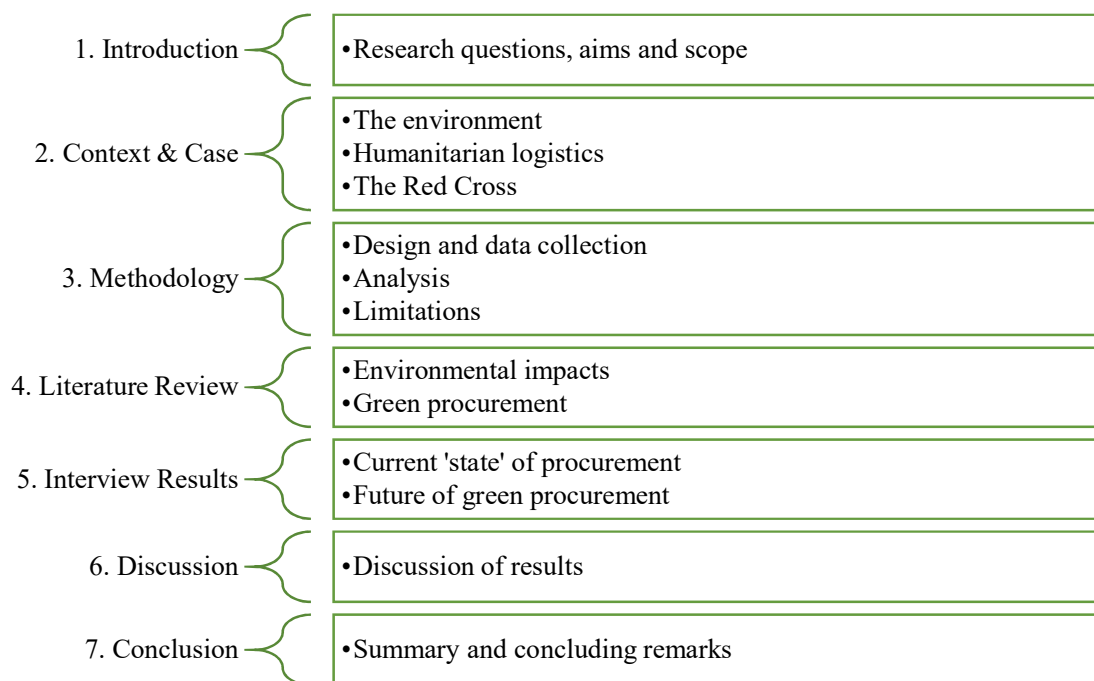


Figure 1. Thesis layout

2 CONTEXT AND CASE

Before jumping into environmental impacts of humanitarian operations and green procurement, it is applicable to define the broad context and then narrow it down to reach the point at which green procurement finds its operational place. This is accomplished through the following sections: *2.1 The Environment*, *2.2 Humanitarian Logistics*, and *2.3 the Case of the International Federation of the Red Cross and Red Crescent Societies*.

2.1 THE ENVIRONMENT

As the focus of this research is the inclusion of environmental considerations in humanitarian response to disaster, it is important to first define what is meant by ‘disaster’, as well as ‘environment’ and the potential roles it plays in humanitarian response.

Disaster is described by the IFRC as:

A sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community’s or society’s ability to cope using its own resources. It is inclusive of those caused by natural hazards, such as floods and earthquakes, as well as those with human origins. (IFRC, 2017i)

The environment is described by the *Humanitarian Charter* as:

The physical, chemical and biological surroundings in which disaster-affected and local communities live and develop their livelihoods. It provides the natural resources that sustain individuals, and determines the quality of the surroundings in which they live. It needs protection if these essential functions are to be maintained. (The Sphere Project, 2011)

As the environment in which the disaster occurs underlies all humanitarian action, organizations responding must be aware of existing issues, as well as issues that can arise while working in the environment. For example, environmental issues may exist prior to the onset of a disaster which may contribute to a humanitarian crisis, or even be the underlying cause of a disaster. Examples include conflicts over natural resources or direct damage to the environment, such as through poor land-use functions (Srinivas & Nakagawa, 2008; UNEnvironment & United Nations Office for the Coordination of Humanitarian Affairs, 2014). Disasters can also exacerbate existing environmental conditions or create added problems, such as ground and surface water

contamination caused by flooding, air pollution caused by forest fires, or habitat and crop destruction due to drought (Srinivas & Nakagawa, 2008). Furthermore, mass displacement and subsequent relocation of populations due to disaster can also lead to environmental issues such as pollution and unsustainable natural resource usage, for example deforestation stemming from overharvesting of local forests to build shelters or for fire wood (Abrahams, 2014; Mainka & McNeely, 2011). Finally, and the primary focus of this research, are the impacts to the environment caused by humanitarian response which also have the possibility of worsening pre-existing environmental problems and exacerbating risk and vulnerabilities (UNEnvironment & United Nations Office for the Coordination of Humanitarian Affairs, 2014)

2.2 HUMANITARIAN LOGISTICS

A brief presentation of the relief supply chain and humanitarian logistics is relevant as it provides the broader context for procurement within humanitarian operations.

The ‘humanitarian supply chain’, also referred to as the ‘relief supply chain’ describes the “network of suppliers, manufacturers, distributors, retailers and customers (beneficiaries) which are connected by material, information and financial flows” (Van Wassenhove, 2006, p. 480). Figure 2 illustrates these general aspects of the humanitarian supply chain. The operations and management of the humanitarian supply chain then fall under the term ‘humanitarian logistics’, and is described by the IFRC:

The acquiring and delivering of requested supplies and services, at the places and times they are needed, whilst ensuring best value for money. In the immediate aftermath of any disaster, these supplies include items that are vital for survival, such as food, water, temporary shelter and medicine, among others. Key logistics services include procurement, transportation, warehousing and handling, contingency stock and fleet services. (IFRC, 2017d)

A commonly cited definition within peer-reviewed literature is:

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. (Thomas and Mizushima (2005) as cited in Jahre et al. (2016)

While not diving into significant discourse in defining humanitarian logistics, it is relevant to note that both definitions fail to include reverse logistics, which has progressively been

identified as important in the humanitarian context, specifically with regards to supply chain sustainability (Battini et al., 2016; Jahre et al., 2016; Peretti et al., 2015; Sarkis et al., 2012). Reverse logistics is concerned with closing of the supply chain loop through activities concerning how materials are consumed back into the system through recycling, remanufacturing, reclamation, refurbishing, repackaging, returns processing, salvage, and landfill (Peretti et al., 2015; Sarkis et al., 2012).

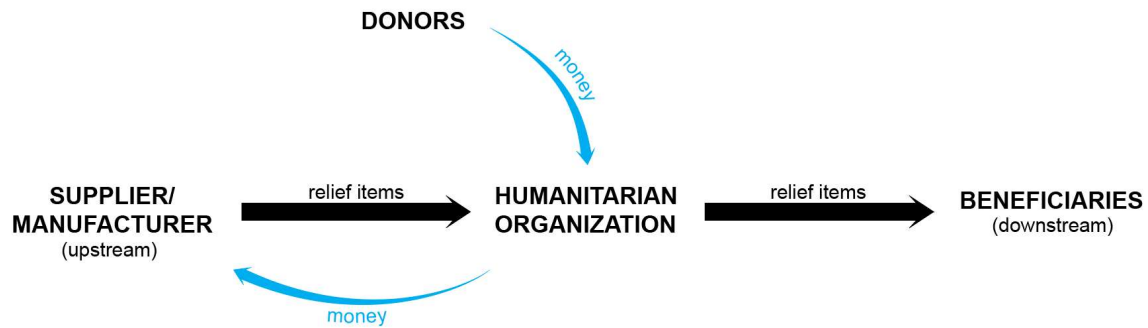


Figure 2. Humanitarian supply chain

2.2.1 PROCUREMENT

As noted in the previous section, procurement constitutes one aspect of humanitarian logistics. While again, beyond the scope of this study, it is important to acknowledge there is debate between the uses and overlap of the terms ‘procurement’, ‘supply management’, ‘purchasing’, and ‘sourcing’, depending on the author. As the scope of this research within the umbrella of the IFRC, their organizational definition will be utilized. Thus, procurement is defined as:

The purchase of goods, services and capital items, as well as the contracting (hiring or renting) of equipment, facilities, consultants or services. The IFRCs full procurement services include tendering, supplier selection, transportation to final port of entry, import and export, insurance inspection services. (IFRC, 2017g, p. Scope of services)

To further clarify underlying definitions, ‘purchasing’ will be defined as “the specific function associated with the actual buying of goods and services from suppliers.” ‘Tendering’, also referred to as ‘sourcing’ is “identifying and working with appropriate suppliers” (Logistics Cluster, 2015a).

Procurement, and its underlying activities ensure that NGOs have the various goods and services available to fulfill their mandates of saving and protecting lives. It is also noted as being a key activity capable of impacting both the upstream and downstream activities of the humanitarian supply chain (Logistics Cluster, 2015a). Therefore, it can be concluded that decisions made by procurement staff within an NGO, regarding which suppliers to use and what items to purchase, have environmental implications spanning from raw material extraction and manufacturing all the way to possible impacts of the resulting products in the field, such as their care and disposal, referred to as life-cycle responsibilities (see Figure 3 below).

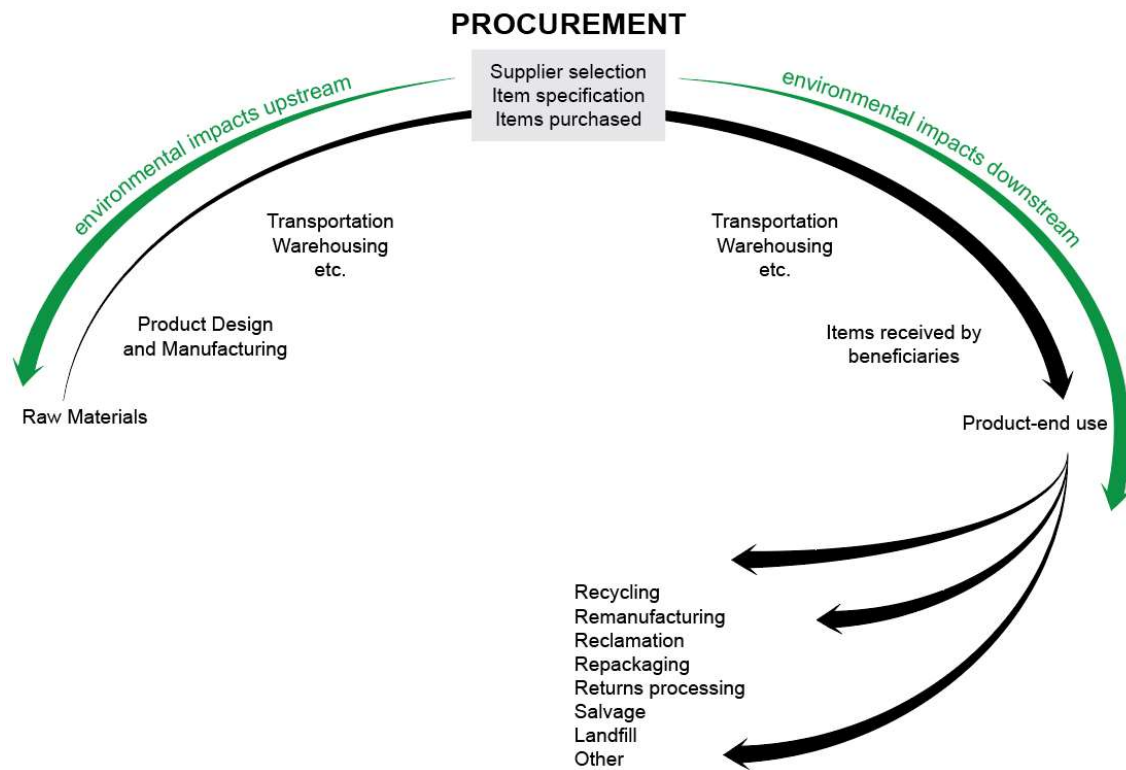


Figure 3. Procurement flows

RESOURCES GUIDING INTERNATIONAL PROCUREMENT ACTIVITIES:

IFRC Procurement Portal - The main gateway to procurement information within the Movement. The portal contains information for IFRC, National Societies as well as private-sector suppliers (see Figure 5) (IFRC, 2017f). Currently an environmental policy does not exist for guiding the inclusion of environmental concerns through the procurement process, or in general throughout the operations of the IFRC. However, considerations are included when sourcing through the inclusion of initial qualifying questions to the supplier included in the *Supplier Registration Form* (see Figure 6) (IFRC, 2009).

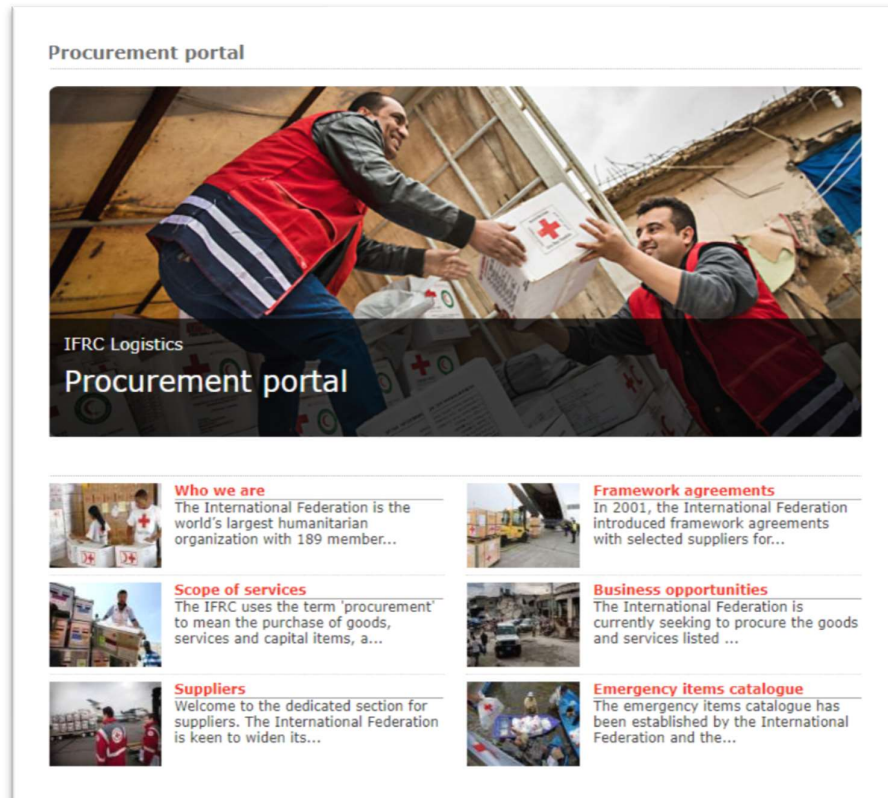


Figure 5. IFRC procurement portal (IFRC, 2017f)

10. ENVIRONMENTAL CONSIDERATIONS
 Have you identified the main environmental impacts / risks of your activity?
 Yes No (If yes, please provide details)

Have you set up any policy/ objectives in order to limit your environmental impacts?
 Yes No (If yes, please provide details)

Are there any resources dedicated to environmental management, (i.e. systems, team)?
 Yes No (If yes, please provide details)

IFRC_Supplier's Registration Form_V1.0 Page 2 of 5

Figure 6. Excerpt from IFRC Supplier registration form (IFRC, 2009)

The ICRC/IFRC emergency items catalogue - A collection of over 4,000 standardized items as established by the IFRC and the ICRC with the support of the Red Cross National Societies (see Figure 7). The aim of the catalogue is to “standardize and harmonize the selection and procurement of relief items during emergency operations.” It contains general information as well as technical specifications for included items; therefore, items can be purchased through the catalogue, or the specifications can be used to source independently from other suppliers (IFRC, 2017a).

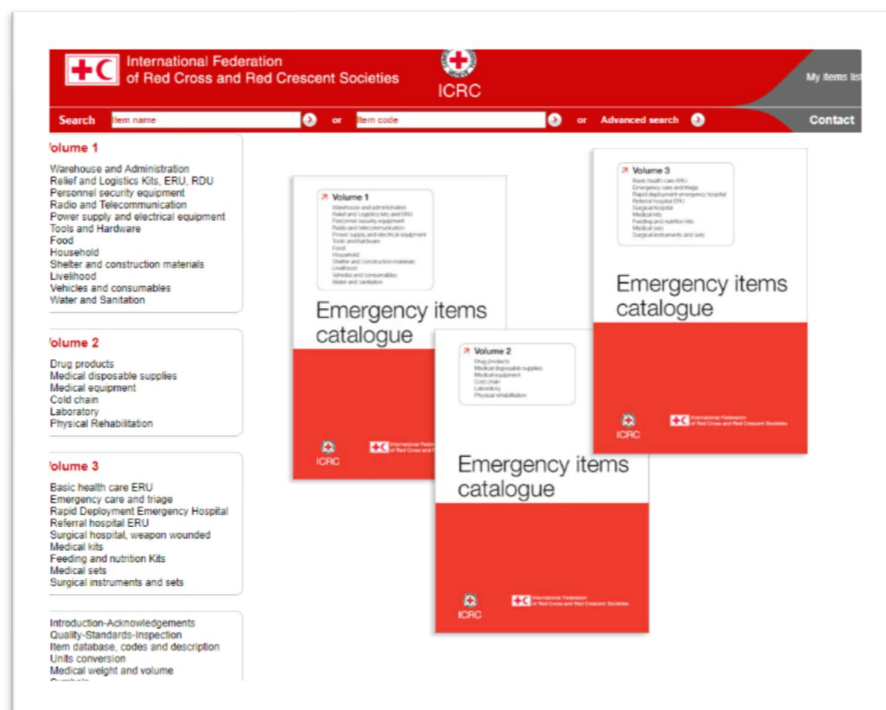


Figure 7. Emergency items catalogue (IFRC, 2017a)

2.3.1 GREEN RESPONSE

Mainstreaming of the environment within the IFRC and Red Cross National Societies operations is currently in the development stage. At present, a concept document for ‘Green Response’ has been developed but not yet published nor implemented throughout the organizations.

The Green Response approach is described as a “change of mind-set prior to and during the response phase, where traditional disaster response operations are supplemented with consideration for the environment and ecosystems” (IFRC and Swedish Red Cross, 2017, p. 5. Much of this approach is to be incorporated in preparing for disaster as this is an entry point to inclusion of the environment and eco-system. While the focus of this approach is to include environmental considerations throughout the organization’s operations, the approach is also clear in stating “saving lives and reducing suffering should always remain at the heart of an emergency response operation.” In addition to prevention of negative impacts, Green Response also aims to strengthen positive impacts of emergency response on the environment. Figure 8, below, depicts where the Green Response approach attempts to intervene to reduce negative impacts and strengthen positive impacts (IFRC and Swedish Red Cross, 2017).

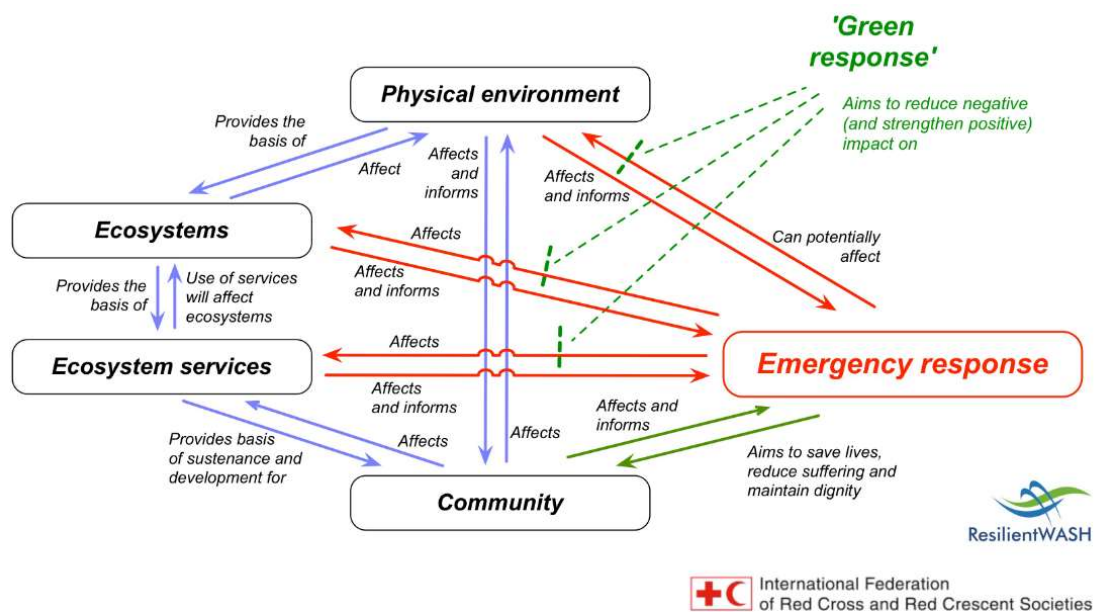


Figure 8. Green Response (IFRC and Swedish Red Cross, 2017, p. 6)

In connection to procurement, Green Response considers the entire lifecycle of products and services as described in Figure 9. This includes “all damages done that result directly and indirectly from the emergency response, inclusive of reducing the potential harm done through operation, maintenance and repair and final discharge” (IFRC and Swedish Red Cross, 2017, p. 7). Specifically, it is inclusive of:

- Relief items and how they are produced, transported, stored, used and disposed of
- Working with suppliers of products and services to ensure that environmental issues have been looked at and where possible negative impacts mitigated.
- Working with partner organizations (humanitarian organizations, authorities) to put the environment on the agenda.
- Adapting the way operations are organized, what is measured and reported upon.
- Raising awareness of beneficiaries to change the perception and attitude toward environment and ecosystems, where possible. (IFRC and Swedish Red Cross, 2017, p. 7)

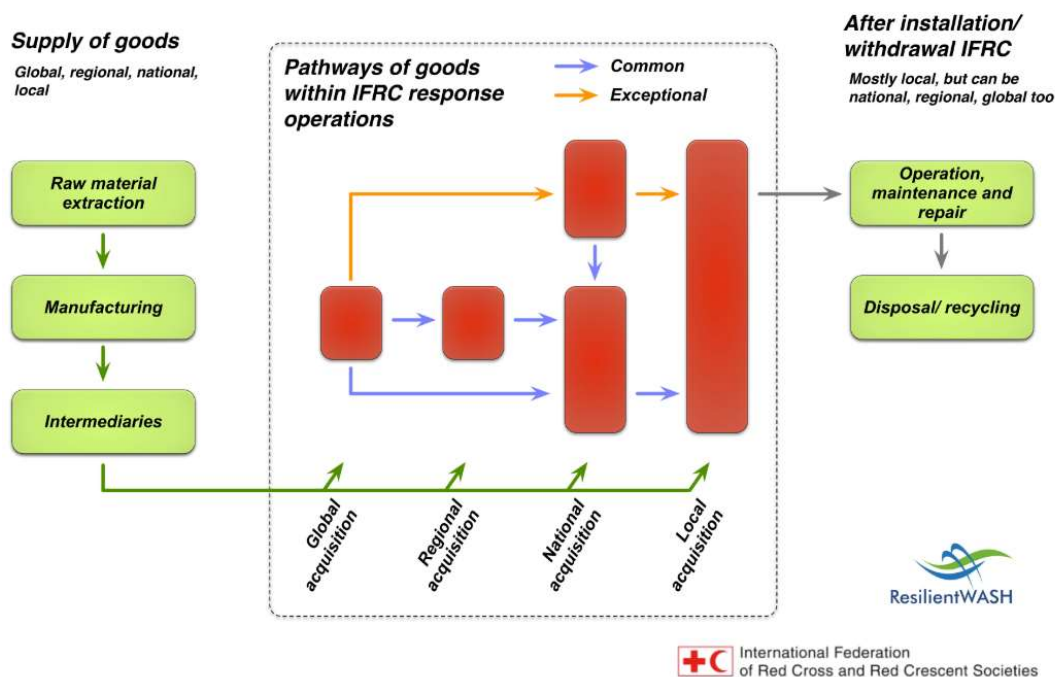


Figure 9. Stages in the lifecycle and location of supplies used in emergency response (IFRC and Swedish Red Cross, 2017, p. 6)

Although Green Response has not been formally launched, six key elements have been identified as areas for implementations: policy and strategy; technical; attitude, capacity building, measuring and learning; adapting existing approaches, procedures, process and materials; and programing and external elements (IFRC and Swedish Red Cross, 2017).

3 METHODOLOGY

Research aims were pursued through the collection and analysis of primary and secondary qualitative data, and centered on the International Federation of Red Cross and Red Crescent Societies (IFRC) as a case-study. The specifics of the design and data collection as well as other aspects of the methodology will be described in detail in the following sections: *3.1 Design and data collection, 3.2 Analysis, and 3.3 Limitations.*

3.1 DESIGN AND DATA COLLECTION

The research design takes form through collection and analysis of both primary and secondary data sources as diagramed in Figure 10.

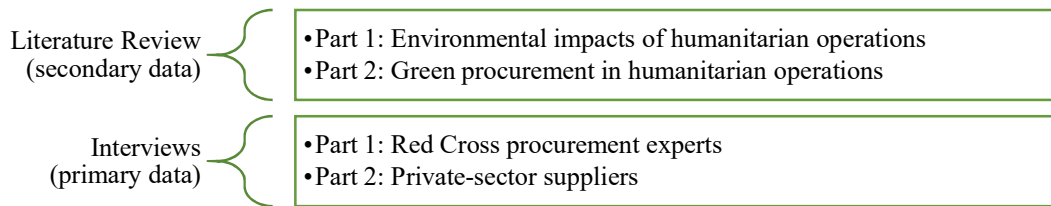


Figure 10. Data sources

3.1.1 LITERATURE REVIEW

Secondary data was collected in the form of a literature review to establish the context for the research questions as well as inform the collection and analysis of primary data (interviews). The literature review was done in two parts as described in Table 1. Snowballing through use of the reference sections of peer-reviewed articles was used to identify further relevant literature, including gray literature produced by and/or for humanitarian organizations, such as the United Nations. When available, relevant IFRC literature was also utilized. Detailed listing of key search terms and databases can be found in Appendix A.

Table 1. Literature review

	<i>Description</i>	<i>Research questions explored:</i>
<i>Part 1</i>	Peer-reviewed and gray literature review of environmental impacts of humanitarian response following disaster with focus on impacts associated with emergency relief items.	<ul style="list-style-type: none"> – General - What literature exists on environmental impacts of humanitarian operations? – What environmental impacts are associated with emergency relief items in the field?
<i>Part 2</i>	Peer-reviewed literature review of green procurement in connection to humanitarian response	<ul style="list-style-type: none"> – General - What literature exists on green procurement in the humanitarian sector? – What are key considerations for implementation of a green approach to procurement? – What role(s) can a supplier play in adoption of green procurement practices?

3.1.2 INTERVIEWS

Primary data was collected through a semi-structured interview process to allow for an exploratory opportunity to inform about the current “state of things”, while maintaining enough structure to allow for comparisons across responses. Furthermore, semi-structured interviews allowed for respondents to raise issues that were not anticipated (Silverman, 1993 as cited in Flowerdew & Martin, 2005, p. 111). The interviews were done in two rounds. The first round of interviews included logistics and program staff for international programs at Red Cross societies. The second round included private-sector suppliers currently supplying the informant Red Cross societies. The purpose of the interviews was to obtain a dual perspective on green procurement within the humanitarian sector, one from the organization itself and one from the supplier. The next sections describe in detail the selected samples, approach and design of the interviews and process.

SAMPLE 1: HUMANITARIAN RESPONSE SECTOR

As the driver behind this research began in connection to the discussion of the Green Response approach with the Swedish Red Cross, the interview sample for procurement specialists in the humanitarian sector was limited to Red Cross Societies, IFRC and ICRC² as these were available through connections with the Swedish Red Cross. The identification of this interview sample was purposive/non-random, as it was based on human judgement and the relevance of the sources in connection to the objectives of the research (Flowerdew & Martin, 2005, p. 97). Specifically, interviewees were identified by their position as a designated procurement staff, or in a position with specific knowledge of procurement procedures as well as experience. Approximately 14 Red Cross procurement practitioners were contacted directly through emails sent by Swedish Red Cross and/or the researcher, one was contacted via email through a personal contact, and one was contacted through a general request form on their society’s website. In addition, the emails were forwarded on to additional contacts within the IFRC/ICRC (snowballing), therefore the precise total of indirectly contacted individuals is unknown. In total 17 potential informants were known to have been contacted, and of these, six were interviewed representing four National societies, one IFRC Regional Logistics Unit, and one ICRC. The final description of Red Cross informants is included in Table 5 (Section 5.1.1).

² While the ICRC operates separately from the IFRC, the Emergency Relief Catalogue is a joint effort by both organizations as well as National Societies. Therefore, the ICRC plays a relevant role, and can provide insight into this study.

SAMPLE 2: PRIVATE-SECTOR SUPPLIER STAFF

The second round of interviews targeted private-sector suppliers currently providing supplies for the interviewed Red Cross informants. These companies and internal contacts were identified by the informants of the Red Cross interviews, and then were contacted either directly by the researcher via email, or by the Red Cross informant. In total six companies were contacted, and four participated in the interview process. A description of informants is included in Table 7 (Section 5.1.2).

APPROACH

The approach to the design of content for the interviews was derived from the backcasting method (Holmberg, 1998) with the inclusion of an informal SWOC analysis. Backcasting is a systematic step-based approach designed for strategic planning for sustainability (Holmberg, 1998), and therefore appropriate for this research. In addition, it is designed to address complex problems where there is need for major change (Holmberg, 1998, p. 33) which additionally aligns with the issues of implementation of green procurement in an international humanitarian organization.

A modified version of backcasting was used to design the interview questions (see Table 2.) The modified version utilized the existing “Green Response” approach as a pre-defined framework for sustainability (Step 1 of Holmberg’s backcasting method). Next, the interview designs sought to establish the existing context and current “state of procurement” (Step 2), then provided the informants with a “vision” for the future: implementation of green procurement (Step 3), which established the context to ask for key factors to achieving its implementation.

Table 2. Backcasting

<i>Holmberg’s Backcasting (1998)</i>	<i>Modified Backcasting</i>
<ol style="list-style-type: none">1) Define a framework for sustainability2) Describe the current situation in relation to the framework3) Envisage a future situation4) Find strategies for sustainability	<ol style="list-style-type: none">1) Green Response approach pre-defined2) Describe current “state of procurement”3) Vision for the future: “green procurement”4) Perceived key factors for implementing “green procurement”

The overall approach allowed for informants to respond in a dialogue style, and was structured enough to allow for analysis across responses and samples. The interviews were conducted

through audio and or/video using Skype or WhatsApp, and audio recordings of the interviews were then transcribed which allowed for detailed analysis of interview content. Hand notes were also taken, which proved important after losing one recording to technology issues. The interview guides can be found in Appendix B and Appendix C.

3.2 ANALYSIS

Analysis of secondary data through Part 2 of the literature review served to identify potential related literature and trends for what inhibits or drives implementation of green procurement within the humanitarian response sector. Using these initial findings, the collection of primary data through semi-structured interviews was used to explore whether current academic literature in any way inform key factors for implementing a green approach to procurement within the humanitarian sector.

Interpretation of the qualitative interviews occurred through “open coding”, which allowed for categorization of the responses (Flowerdew & Martin, 2005, pp. 222-223). Specifically, the interview transcripts were reviewed and responses coded based on the question it was associated with. Coding was done at the sentence and paragraph level. Further sub-coding was then used to categorize the responses to the question regarding perceived key factors for implementing “green procurement” (Red Cross question Q7 and supplier question SQ4). These sub-codes, also referred to as themes, arose from the informants’ responses. Analysis between the two informant categories was then possible as various questions in each interview aligned, such as Q7 and SQ4. Detailed question coding can be found in Appendix D.

3.3 LIMITATIONS

In connection to collection of secondary data, it should be noted that there was a struggle to find peer-reviewed literature in connection to environmental impacts of humanitarian response, and additionally connecting to “green procurement” and the humanitarian response sector. Because of this, the literature review grew greatly from snowballing from reference sections and additions of synonymous key words. This potentially led to a somewhat chaotic literature review methodology due to the casting of such a wide net.

In connection to primary data collection the following issues should be noted. The number of potential Red Cross informants contacted was limited. This was due to the method used of contacting individuals that were existing contacts of my personal contact at the Swedish Red Cross. Thus, the sample was initially restricted which further limited the snowballing of

potential supplier informants. Of related concern is the potential for those Red Cross staff invited to participate to already have strong opinions in favor of “green” efforts as they were connected to my research contact at the Swedish Red Cross who is involved in the development of the Green Response approach for the IFRC.

Additionally, as the supplier informants were identified by the Red Cross informants, there may have been varying reasons for their selection that could skew results, including their known views for or against sustainability and green procurement. Overall, while this connection to the Swedish Red Cross provided access to information and had the benefit of direct connections to various Red Cross staff, it could additionally be limiting the interview pool, not solely to only Red Cross staff, but then additionally to those that have a connection with the Swedish Red Cross

The sample size also limits the findings of this research. The total number of informants is under the initial goal of this research which was to conduct eight Red Cross and eight supplier interviews. However, for consideration are the extremes represented within both informant categories. For Red Cross informants, this included representation of four National Societies, as well as one IFRC Regional Logistics Unit and the ICRC. For suppliers, this included a sustainability-driven supplier in Norway, two private-sector suppliers in China, and a designated humanitarian aid supplier in India.

Limitations created by the researcher are also valid to include. There is potential that the manner in which the interview questions were asked impacted responses. Great care was taken to ask the interview questions in a similar manner to each informant, however, due to the semi-structured nature, the flow and wording was slightly different from interview to interview. Of further note is the changing knowledge of the researcher during the process of interviews. By the end of the process there was a greater understanding of the standard processes, functions, roles, and responsibilities of the IFRC, as these were similar across the informants. Therefore, in later interviews less time was needed for background-type questions and more could be focused on the later questions in the interview.

The subjective nature of qualitative data interpretation also poses as a limitation, specifically when categorizing results under various appearing themes. In this case an extensive amount of time was spent reviewing interview data to ensure that responses were not miss or overinterpreted. In connection is the position of the researcher as an outsider of the Red Cross, while this provides objectivity to review the information without bias, it additionally can allow

for oversimplification or misunderstanding of organizational processes, another form of misinterpretation

An additional issue is an informant's willingness or hesitance to provide information. For example, some respondents required extended prompting to answer and elaborate on questions, while others would talk for long amounts of time covering a variety of topics. This made some interviews rich in relevant as well as irrelevant information, and others seem lacking altogether. Overall, suppliers were less likely to provide significant information and required prompting, even then, their interviews were much shorter and did not provide the level of detail afforded by the Red Cross informants.

Finally, with respect to Respondent 6 from the ICRC, it should be noted this informant's responses were somewhat unique in comparison to the other Red Cross informants as the informant is part of the department that defines the policy and put in place standard operating procedures for the ICRC. While the emergency items catalogue is a joint effort between the IFRC and ICRC, these organizations operate as separate entities, with separate policies. Therefore, while the interview was rich in information regarding how the ICRC implements sustainable measures thought-out procurement, this is not a focus within the results and discussion, as the case focuses on the IFRC and National Societies.

4 LITERATURE REVIEW

4.1 ENVIRONMENTAL IMPACTS OF HUMANITARIAN OPERATIONS

As environmental mainstreaming, green procurement and Green Response seek to address environmental impacts connected to humanitarian operations, this section of the literature review investigates existing literature concerning environmental impacts of humanitarian organizations including those specifically in connection to procurement of non-food items.

Exploration into peer reviewed literature, focused exclusively on environmental impacts of humanitarian operations in response to disaster, resulted in very few results. For example, found literature focused on impacts of disasters (e.g. hurricanes, floods, tsunamis, earthquakes) on the environment with considerations for pre-existing issues of environmental degradation (Srinivas & Nakagawa, 2008), inclusion of eco-systems considerations in post disaster recovery (Mainka & McNeely, 2011), and carbon efficiency of the humanitarian supply chain (Oberhofer, Blanco, & Craig, 2013). Within these peer-reviewed articles mentions of environmental impacts of relief operations included:

- Environmental degradation, pollution, introduction and spread of invasive non-native species, overexploitation of natural resources, disruption of drainage systems and flood retention areas due to improper dumping of waste (Mainka & McNeely, 2011)
- Excessive waste due to disaster debris and other waste leading to inappropriate disposal such as burning and open dumping (Srinivas & Nakagawa, 2008)
- Carbon emissions of emergency relief items as assessed through product life-cycle analysis (Oberhofer et al., 2013)

Additional information on environmental impacts of humanitarian operations was discovered while reviewing peer-reviewed literature connected to greening of, or sustainability within, the humanitarian supply chain (Battini et al., 2016; Eng-Larsson & Vega, 2011; Hasselbalch, Costa, & Blecken, 2014b; Peretti et al., 2015; Sarkis et al., 2012). However, this was primarily located in the contextual sections of the articles versus being the specific topic of focus. Thus, although the peer-reviewed literature concurs that rescue and relief efforts to ease human suffering following a disaster can have negative (though potentially unintended) impacts on the environment, a significant gap in available peer-reviewed literature with a focus on “environmental impacts of humanitarian response” exists.

Additional, information on this topic was confined to gray literature (organizationally produced documents) such as practice notes, assessment documents, environmental mainstreaming documents and tools developed to assist in mainstreaming of the environment (Barrett et al., 2007; Green Recovery and Reconstruction Toolkit, 2010; IFRC, 2013; IFRC and Swedish Red Cross, 2017; UNEnvironment, 2014). These documents provided overviews of environmental impacts stemming from specific events in the field, some including various listings and diagrams of general environmental impacts stemming from organization’s action and operations, such as that from the Green Response concept document shown in Figure 11.

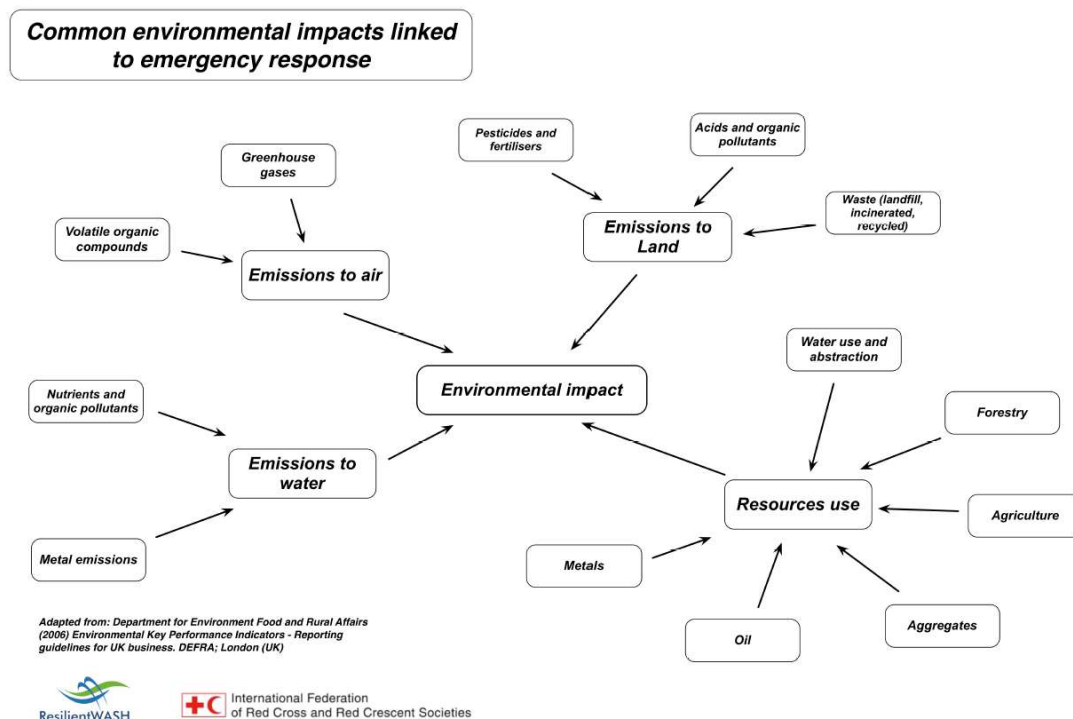


Figure 11. Common environmental impacts linked to emergency response (IFRC and Swedish Red Cross, 2017)

When narrowing the focus to impacts associated with non-food items introduced by humanitarian organizations, both peer-reviewed and gray literature highlight environmental impacts caused by waste management issues, also referred to as end-of-life considerations³ (IFRC, 2013; Mainka & McNeely, 2011; Oberhofer et al., 2013; Srinivas & Nakagawa, 2008; UNEnvironment & United Nations Office for the Coordination of Humanitarian Affairs, 2014). These end-of-life considerations include recycling, reuse, and disposal of relief items and their respective packaging (IFRC, 2013; Oberhofer et al., 2013).

³ Transportation was also a primary concern within the literature, however, this falls outside of the scope of study.

Following a disaster, waste issues are exacerbated as the systems become overly burdened with the influx of waste from disaster debris and humanitarian operations (Eng-Larsson & Vega, 2011; Mainka & McNeely, 2011; Peretti et al., 2015; Srinivas & Nakagawa, 2008). Moreover, as relief aid is typically distributed in low-income countries, preexisting waste management systems may be insufficient or non-existent (IFRC, 2013; Srinivas & Nakagawa, 2008). Potential sources of waste from humanitarian operations include discharge of packaging from relief items, operation and maintenance of equipment, and end of the life-cycle of equipment and relief items (IFRC and Swedish Red Cross, 2017).

When examining the related literature, environmental impacts associated with inadequate waste management can then be summarized as follows (Barrett et al., 2007; IFRC and Swedish Red Cross, 2017; Srinivas & Nakagawa, 2008):

- Incineration of waste causing harmful emissions to air
- Open dumping leading to contamination of land and water
- Improper disposal of hazardous materials or toxic substances such as asbestos, fuel, and other chemicals

4.2 GREEN PROCUREMENT

The section aims to, first, introduce and define ‘green procurement’ and place within the humanitarian supply chain. Second, it seeks to review existing peer reviewed literature connecting green procurement with the humanitarian supply chain, including focus on key factors contributing to adoption as well as customer-supplier relationships.

4.2.1 DEFINING GREEN PROCUREMENT

As previously mentioned, ‘green procurement’ is being used as the lens to explore the operationalizing of environmental considerations within humanitarian operations. As mentioned in Section 2, there is significant debate regarding terminology used to describe the supply chain and its components and operations, this becomes further exacerbated with the introduction of sustainability and greening to supply chain terminology. While this discourse is, again, beyond the focus of this research, it is important to clarify ‘green procurement’ for the context of this research; therefore, the following definition will be used:

The purchase of goods, services and capital items, as well as the contracting of equipment, facilities, consultants or services that minimize environmental impacts throughout their lifecycle when compared to goods, services and works with the same

primary function that would otherwise be procured. This means considering the costs of securing raw materials, and manufacturing, transporting, storing, handling, using and disposing of the product. (Adapted from European Commission (2016), IFRC (2017d) and (International Institute for Sustainable Development, 2017).

Of final note before the presentation of peer-reviewed literature is the use of existing terminology, and the relationships between concepts that can be used to explore ‘green procurement’ within literature. To put this in perspective, green procurement can find itself nested within the concept of sustainable procurement, which is then nested within sustainable supply chain management (see Figure 12). However, ‘green procurement’ can also be thought of as lying within greening of the supply chain (see Figure 13). To the point, there are several ways to explore this concept, both through the “greening of the supply chain” (Eng-Larsson & Vega, 2011; Peretti et al., 2015; Sarkis et al., 2012), but additionally through literature discussing the “sustainable supply chain” (Battini et al., 2016; Hasselbalch et al., 2014b).

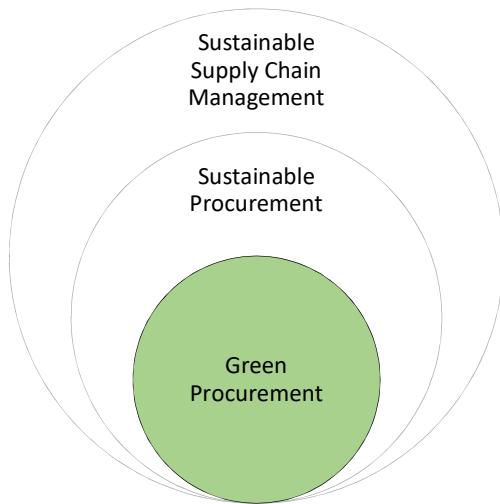


Figure 12. Green procurement 1



Figure 13. Green procurement 2

4.2.2 GREEN PROCUREMENT WITHIN HUMANITARIAN LOGISTICS LITERATURE

Peer-reviewed literature specifically focused on green procurement within the humanitarian sector was not identified, therefore, it is possible to say that there is a significant gap within academic literature. However, when expanding the literature search to include a broader view of greening and sustainability within the humanitarian context allowed for discovery of relevant academic literature providing background and insight to the topic at hand. Specifically, the following articles were identified.

- A study to the barriers to greening the relief supply chain (Sarkis et al., 2012)
- Investigating the barriers to sustainable procurement in the United Nations (Hasselbalch et al., 2014b)
- Green logistics in temporary organizations: A Paradox? learnings from the humanitarian context (Eng-Larsson & Vega, 2011)
- Sustainable humanitarian operations: Closed-loop supply chains (Battini et al., 2016)
- Reverse logistics in humanitarian operations: Challenges and opportunities (Peretti et al., 2015)

Sarkis et al. (2012) and Hasselbalch et al. (2014b) were the most applicable articles concerning implementation of green or sustainable practices within the humanitarian supply chain. While Sarkis et al. (2012) focused generally on greening the relief supply chain, Hasselbalch et al. (2014b) focused on sustainable procurement within the humanitarian context. Sarkis et al. (2012) explore barriers to greening the relief supply chain through expert opinions and literature from humanitarian logistics and green supply chain management. In this study, they used categorization of barriers to introducing new practices and procedures in a commercial supply chain as the base to exploring barriers to greening the relief supply chain. From this a list of barriers and categorization of barriers to greening is established (see Table 3).

Table 3. Barriers to greening the relief supply chain (Sarkis et al., 2012, p. 203)

<i>General categories</i>	<i>Barriers to greening the relief supply chain</i>
<i>Informational</i>	Lack of information Inadequate knowledge Lack of communication
<i>Political</i>	Political limitations Lack of policies
<i>Organizational</i>	Poor supply chain partnership management Insufficient training and education Lack of coordination Lack of top management support Poor planning/preparedness activities Lack of performance measurement systems Last mile considerations <i>Path dependency</i>
<i>Temporal</i>	Uncertainty of time of event Little time to plan and make decisions Unpredictable demand Urgency
<i>Technological</i>	Unavailability of appropriate technology Degraded infrastructure Lack of transport infrastructure
<i>Cultural-organizational</i>	Goal to help people, environment second at best Lack of attitude and willingness to operate in a green way <i>Path dependency</i>
<i>Economic</i>	Funding Lack of supplies, equipment Lack of resources Inadequate human resources
<i>Operational</i>	Structures and/or processes not in place

Sarkis et al. found the general barriers to greening the relief supply chain were similar to those in the commercial sector literature (Sarkis et al., 2012, p. 204). Main differences were related to the typical context of humanitarian logistics, including unpredictability, uncertainty and security. The major finding was that the issue of saving lives overrides environmental concerns. Additionally, they found that organizational, technological, cultural and economic barriers stand out as the most important barriers to greening. Findings on the “Culture” category indicated a need to specify that the humanitarian supply chain differs in this category from a commercial supply chain in that, not only must the organizational culture be considered, but additionally the local culture in which the humanitarian supply chain is acting. Temporal barriers were also important as relief supply chains have a focus on the immediate aftermath which usually takes precedence over other issues (Sarkis et al., 2012). Eng-Larsson and Vega (2011, p. 128) also note temporal issues, as logistics systems in temporary organizations, such as humanitarian operations, are designed to meet temporary and immediate objectives, such as saving lives, with little opportunity to consider long-term consequences.

Hasselbalch et al. (2014b) specifically investigate barriers to implementing sustainable procurement practices in the United Nations system. This research was based on grounded theory and done through the collection of interviews of UN procurement practitioners and policy makers. A summary of their barrier framework, used as the basis for an expanded study (Hasselbalch, Costa, & Blecken, 2014a) can be found in Table 4 below. While there is significant overlap between the barriers when comparing Sarkis et al. (2012) to (Hasselbalch et al., 2014a) the categorization methods vary greatly. Findings from this article are relevant to this research as sustainability in this study was inclusive of the environment. However, as it is also inclusive of social and economic factors, as well as barriers directly tied to the United Nations, some findings are not applicable.

Table 4. Barrier Framework (Hasselbalch et al., 2014a)

<i>Category</i>	<i>Barrier</i>
<i>Information</i>	Lacking general information on sustainable procurement (or lacking awareness) Difficulty in defining environmental criteria Difficulty in defining social criteria
<i>Tools</i>	Procurement manual does not cover sustainable procurement Difficulty in applying Sustainable Procurement tools and techniques such as life-cycle costing Lack of tools and guidelines to support sustainable procurement
<i>Performance measurement</i>	Lack of monitoring/auditing of sustainable procurement performance Lacking goals and targets for sustainable procurement performance Lacking sustainability benchmarks
<i>Policy/strategy</i>	Lacking sustainable procurement policy Procurement policies focused on cost-effectiveness only Need for more top management commitment Lack of inter-agency collaboration on procurement issues Staff resistance to organizational change
<i>Mandate/politics</i>	Risk of damaging relations with developing countries Sustainable procurement does not support our efforts to meet our current mandate Lack of UN General Assembly endorsement of sustainable procurement Lack of support/interest by Member States
<i>Supply</i>	Sustainable goods/services unavailable in local markets Risk of limiting competition in our global supply base
<i>Demand</i>	Requisitioners do not demand sustainable procurement Donors do not demand sustainable procurement Beneficiaries do not demand sustainable procurement
<i>Resources</i>	Sustainable procurement is too expensive in general Inability to justify higher upfront costs SP takes too much time Training needs Lacking funds in our budget to do sustainable procurement Lacking staff to support/implement sustainable procurement Lacking in-house technical expertise

Eng-Larsson and Vega (2011) discuss the greening of the supply chain through the discussion of gaps to greening. While they focus primarily on environmental impact in connection to transportation, their study additionally includes aspects of general “greening of the supply chain” relevant to procurement. Specifically, Eng-Larsson and Vega (2011, p. 137) put strong emphasis on *when* greening efforts should occur; stating specifically, “less environmentally harmful solutions which are to be used in the response phase-need to be considered in the preparedness phase.” Sarkis et al. (2012) also supports the importance of planning and preparedness toward greening efforts. Eng-Larsson and Vega (2011) also focus on the issue of matching supply with demand or insuring the actual needs are met with the appropriate response. Peretti et al. (2015) also discuss supply and demand, as matching supply with demand has the opportunity to reduce unwanted waste.

Battini et al. (2016) and Peretti et al. (2015) look at the greening and sustainability of the supply chain through the lens of reverse logistics. They find this to be innovative, as typically focus in humanitarian logistics is on forward flows, such as pre-positioning and distribution of contingency stock. While reverse logistics focuses on reverse flows, and overlaps in many instances with aspects of green logistics (see Figure 14). Peretti et al. (2015) seek to identify specific challenges and opportunities for the inclusion of reverse logistics in humanitarian operations, based on the type of items left in the field. The implications for green procurement are clear, when taking into consideration their focus on packaging and end of life-cycle considerations for relief items purchased and distributed by humanitarian organizations. General opportunities uncovered include matching supply with demand to avoid waste, and the need to align policies with green objectives. Challenges highlighted the expensive cost of implementing reverse logistics systems, and difficulty in directing resources outside of disaster response activities. The study was done through a literature review of reverse logistics in the commercial and humanitarian sectors and collection of expert interviews from top logistics NGOs (Peretti et al., 2015).

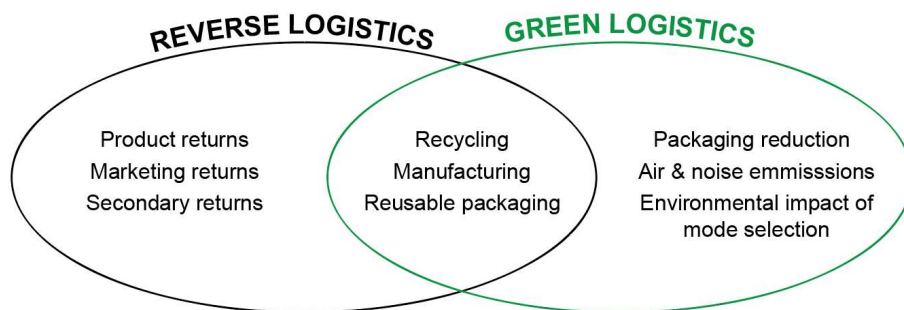


Figure 14. Reverse logistics (reformatted (Rogers and Tibben-Lembke, 2001, p. 131) as cited in (Peretti et al., 2015, p. 257))

Battini et al. (2016) use a quantitative model to examine reverse flows in the humanitarian supply chain (e.g. collection of products after they have been used by the affected population). Its limitation is that it is not based on real case applications. However, its situational relevance is derived from its focus on what happens to waste derived from relief aid procured by NGOs. Findings from both Battini et al. (2016) and Peretti et al. (2015) indicate there is interest by the academic community to incorporate reverse logistics into the humanitarian supply chain, however, there has been nothing specifically done to operationalize. Additionally, consistent with Eng-Larsson and Vega (2011), Peretti et al. (2015), and Sarkis et al. (2012) is the desire to apply a model, or theory, from commercial logistics to the humanitarian supply chain, identifying a potential opportunity for future research (Battini et al., 2016).

Overall, a majority of the literature sources can be summarized as being problem-focused in their research approach to greening the supply chain, or implementing sustainable practices into the supply chain. While Hasselbalch et al. (2014b) and Sarkis et al. (2012) each focus specifically on the identification and categorization of barriers, Eng-Larsson and Vega (2011) seek to uncover gaps, and Peretti et al. (2015) detects challenges and opportunities. However, when looking at all these various ‘barriers’, ‘gaps’, ‘challenges’, as well as ‘opportunities’ it seems possible to consider each as potential factors for consideration in adoption of a green approach to humanitarian logistics, including procurement.

CUSTOMER-SUPPLIER RELATIONSHIPS IN FOCUS

Stemming from the future aims of Green Response to engage the private-sector, a further aim of this review is to examine the role of the supplier in greening procurement within the humanitarian supply chain. When looking at the literature reviewed in Section 4.2 connected to greening the humanitarian supply chain, it can be noted that all mention the importance of the supplier in some regard, however none specifically address the customer-supplier relationship in detail, in connection to greening the humanitarian supply chain.

Sarkis et al. (2012) includes supplier collaboration and supplier development as an aspect of the upstream activities of a supply chain, elaborating that the “use of life cycle analysis and design for the environment require close cooperation and collaboration with suppliers and customers.” Eng-Larsson and Vega (2011) only refer to suppliers when presenting framework agreements with suppliers as one aspect of supply chain preparedness. Hasselbalch et al. (2014b) find that while environmental considerations are typically included outside of standard supplier evaluation requirements, most suppliers provided this optional additional information

when asked, presumably indicating a change in the direction of the market toward sustainability.

Peretti et al. (2015) and Battini et al. (2016) discuss the role of the supplier in connection to reverse flows of the supply chain, noting that one possible option when items are done being used is to return to the supplier for servicing, recycling, or disposal. Peretti et al. (2015) do include an example of a supplier activity regarding the development of reusable packaging; however, the role of the supplier, or any further focus on this matter fall outside their focus. In summation, there was not specific literature within the humanitarian context that focused on supplier relationships and greening of the supply chain, indicating an additional gap in literature.

4.3 SUMMARY

While findings of this literature review uncovered deficits within academic literature focused on the specific environmental impacts of humanitarian operations and literature concerning greening and sustainability within humanitarian logistics, it additionally contributed to narrowing these gaps. Specifically, it contributed through its focus on the environmental impacts of relief items delivered during humanitarian operations, and by targeting green procurement within the humanitarian operations context, which was specifically lacking in academic literature.

5 INTERVIEW RESULTS

This section presents the results of the two-part interview process. The findings from both Red Cross and supplier interviews are presented in the following subsections which coincide with interview questions: *5.1 Current “state” of procurement and 5.2 Future of green procurement.*

5.1 CURRENT "STATE" OF PROCUREMENT

5.1.1 RED CROSS INFORMANT RESPONSES

A total of six Red Cross procurement practitioners participated in this study, descriptions are included in Table 5 below.

Table 5. Description of Red Cross informants

<i>Informant</i>	<i>Position</i>	<i>Red Cross Entity</i>
1	Logistics Officer, Disaster and Crisis Response	National Society
2	Logistics Officer, Global Emergencies	National Society
3	Program Officer, Operations, Emergencies & Recovery	National Society
4	Logistics Coordinator	National Society
5	Head	IFRC Regional Logistics Unit
6	Quality Manager	ICRC

PROCUREMENT RESPONSIBILITIES AND BOUNDARIES

Of the four National Societies represented⁴ by informants, all four were responsible for procurement of pre-positioned contingency stock for international operations, three were responsible for the procurement of ERUs. While not the specific focus of this paper, all were additionally involved in longer-term development programs in various parts of the world. Additionally, all have separate staff for purchasing for non-international emergencies vs. international/global emergencies.

The IFRC regional logistics unit was noted as being responsible for procurement, warehouse management, transportation, fleet management and capacity building of 191 Red Cross/Red Crescent Society members. Specifically, if a disaster happens in their designated region they

⁴ It should be noted that all informant responses were from a position of being an expert in their field, and not as reporting opinions of their respective Red Cross entity.

finalize the list of needs, communicate this to the Red Cross community, and facilitate the mobilization of assistance through their logistics functions.

The ICRC informant's departmental procurement responsibilities included procurement of all non-food items, also called essential household items, water, food, and medical items globally. Additionally, the department defines procurement policy and puts in place standard operating procedures, making this informant's responses somewhat unique in comparison to the other five, and therefore often stated separately in the sections below.

In summary, procurement responsibilities fell into the following categories:

1. Emergency stock including pre-positioned
2. Various ERUs
3. Long-term development projects

POLICY

All six Red Cross informants reported following the IFRC, or ICRC⁵ procurement policy for global response. This includes use of the IFRC procurement portal and catalogue. In addition, the four National Society informants also reported a need to adhere to their respective nation's guidelines at certain times. IFRC guidelines were followed when acting internationally while national policies were followed within their country. Additionally, Informant 2 reported following their respective nation's guidelines as they were perceived as "stricter" and therefore additionally ensured adherence to IFRC policy.

Two National Society informants reported environmental considerations were included in their national procurement policy or general guidelines. Informant 1 acknowledging that it was a recent addition to their policy, and that they have "not yet been very active in this space." Informant 4 also stated:

Well, we have it, sort of, in our standards, but I'm a bit on thin ice on this. It's been one of those things where it's sort of-- it's in our general terms and conditions that you're not allowed to pollute and all of this. And we have that where you're supposed to use the most environmentally-friendly solution. But, to be honest, I don't really think any of us really knows what that entails. I mean, we're putting in there to keep it in there, but there's not a lot of-- we're not conscious on this when we're doing

⁵ Informant 6

procurement. And we're doing these things simply because we don't have any easy tools to use to do it.

SOURCING

All informants noted that suppliers are required to go through a formalized selection process. Five informants reported that price, quality and appropriateness are the primary factors when selecting suppliers. Two informants added that the sourcing process included self-reporting by suppliers regarding ethical issues such as environmental performance. However, while they take assurance from the suppliers to make sure they are following various ethical guidelines, there is not an established mechanism whereby this could be regularly checked. Informant 2 referred to it as being somewhat of a “tick-the-box” exercise.

So, the first part is just making sure suppliers have submitted all this stuff and then they go into reviewing about the product. So, considering green considerations or impact, to me, doesn't necessarily fall into the second part of the process. They're looking at price and quality, they're not necessarily looking at environmental impact at that stage.

In contrast, Red Cross Informant 6, discussed Quality-Social-Environmental supplier assessments and audits which evaluate company ethics, social and environmental performance actively as part of their sourcing strategy. This includes visits to and auditing of manufacturing plants.

PRODUCT SPECIFICATION AND ENVIRONMENTAL CONSIDERATIONS

All Red Cross informants report using the IFRC/ICRC standards, as provided in the Emergency Items Catalogue, to guide product specification and selection. Before purchasing, the procurement department is typically advised by programmatic or operations staff what is needed. Two of the National Society informants reported relying on various experts, such as health or sanitation, for assistance in specification of specific items. The procurement department then purchases through the IFRC, or through outside sourcing. Two of the National Society informants reported feeling that they had adequate internal human resources and influence, so they did most of their own sourcing and purchasing externally of the IFRC catalogue (while still following the guidelines). The other two National Society informants reported primarily purchasing directly through the IFRC, as conducting sourcing and maintaining supplier relationships requires staff and time they do not have. All Red Cross informants reported the need to adhere to IFRC guidelines to maintain levels of standardization.

Mentioned by two Red Cross informants as part of their procurement context, was consideration for the beneficiaries (end-users). While within a commercial supply chain the end-user would pay for and determine what goods are purchased, within the humanitarian supply chain the humanitarian organization decides and then funds goods to be distributed to the beneficiaries.

Five out of six informants stated that there is not a formal inclusion of environmental considerations within procurement practices, specifically product selection.

Environmental considerations not really factored in – rather it's more of a cost comparative analysis and quality considerations factored in. We need to start factoring in environmental considerations. ...and it [national procurement policy] does talk about considering environmental aspects for procurement. But I guess we haven't really been active in this space. I guess the focus has always been on does it meet out technical requirements, and then the second thing is how much does it cost, who else can provide it, and that kind of stuff. We've never really, I guess, taken the time to look at it, and say how is it packaged, and that kind of stuff. So, I guess we really need to look at that space. (Informant 1)

When asked if there were current considerations for long term or environmental impact of the different items being procured, such as excess packaging, or use of plastics, or recyclability; or end-of-life considerations, Informant 5 responded:

On that one, if I must say, actually not really so much. We have just started to work on that. So, I mean as you would know, and you've spoken to a few partners, it's honestly a monster organization.

A further informant noted that the environment is not really in focus, however there are some considerations taking place, such as packaging reduction. This informant referred to their approach to environmental considerations as being “piecemeal” (Informant 2). Informant 3 noted that while a formal environmental approach is not really integrated into all actions, they are one of the initiators of the Green Response approach and thus have internal support from senior management and have begun to informally implement some aspects of Green Response, specifically with staff going into the field.

Though a strong majority of the informants indicated there is not a formal focus on the environment when asked directly, most provided examples of some environmentally attentive procurement projects throughout the interview (Table 6).

Table 6. Current environmental considerations (Red Cross informants)

<i>Informant</i>	<i>Environmental Considerations</i>
1	<ul style="list-style-type: none"> – No examples given
2	<ul style="list-style-type: none"> – Elimination of as much packaging as possible before ERU deploys to the field to make sure the field does not end up with unneeded cardboard that cannot be used, disposed of, or recycled. Able to better recycle at national society location. – Use of Air Bus during flight test phases for transport of relief items. Minimizing impact by tapping into flights that would already be happening.
3	<ul style="list-style-type: none"> – Making ERUs more modular to lessen carbon footprint when deployed – Exploring sourcing locally to minimize carbon footprint of things shipped to National Society – Repackaging of equipment before it goes into the field into aluminum boxes to eliminate waste taken into the field. Able to better recycle at national society location
4	<ul style="list-style-type: none"> – Most packaging that is sent out for emergency response can be reused in the field. Specifically, the extra wood that accompanies the ERU can be used to build other things.
5	<ul style="list-style-type: none"> – Biodegradable packaging for mosquito nets as it is an item in high demand when dealing with a situation involving malaria. – Attempting to eliminate carton box used for hygiene kits and potentially replace with a plastic reusable box – Development of a female menstrual hygiene kit that replaces the disposable sanitary napkins with a reusable pad
6	<ul style="list-style-type: none"> – Individual tarpaulins not wrapped in plastic packaging. Reduced plastic packaging by packaging multiple tarpaulins together. – Individual plastic packaging for all items in a kitchen set (15) reduced to one to two paper/carboard cartons. – Previous life-cycle analysis of jerrycans and buckets to evaluate the impact of products.

CURRENT MOTIVATIONS FOR GREENING PROCUREMENT

Two National Societies reported having no current sources of motivation for greening. Four informants claimed that “yes,” they were receiving motivation to green; primarily from donors. This was also referred to as “pressure” by some of the informants. In addition, one informant reported pressure from their country government as an external motivational source, and internal motivation coming from top management. One informant referred to the Federation’s commitment to COP 21⁶ as a source as pressure to green. Another informant referred to a duty to serve beneficiaries as being a source motivation. While not all informants reported current motivation to green, five mentioned the importance of donors’ support in greening.

⁶ 2015 Paris Climate Change Conference

5.1.2 SUPPLIER INFORMANT INFORMATION

While all four suppliers interviewed provide relief items, some major differences were reported including: products supplied, customer base, location, and length of relationship with the Red Cross. A summary is provided in Table 7.

Table 7. Description of supplier informants

<i>Informant</i>	<i>Position</i>	<i>Products</i>	<i>Customers</i>	<i>Location</i>	<i>Years</i> <i>(Company with RC)</i>
7	Junior Sustainability Analyst	Portable solar lamps	Humanitarian sector (United Nations), private sector and individuals	Norway	Just beginning to talk
8	Sales Representative	One-stop shop for various non-food items and logistics services	Humanitarian sector only	India	15-20 years
9	Sales Representative	Stainless steel kitchen sets	Majority private sector, only work with RC in humanitarian sector	China	4 years (2013)
10	Sales Representative	40-liter plastic buckets with lids	Majority private sector, only work with RC in humanitarian sector	China	2 years (2015)

SUPPLIER ENVIRONMENTAL CONSIDERATIONS AND GUIDELINES AND POLICIES

All four supplier informants reported that environmental considerations do exist and are based on a variety of motivations as noted in Table 8. Of the four informants, Informant 7 was the only supplier interviewed that has a business mission and plan rooted in environmental sustainability. In addition, all four informants report various changes they have made to products to lessen the environmental impact in the field Table 9.

Table 8. Supplier environmental guidelines

<i>Informant</i>	<i>Environmental guidelines/standards</i>	<i>Motivations</i>
7	Future Fit Benchmark, a science-based definition of what it means to be an environmentally sustainable business for the future (http://futurefitbusiness.org/)	Internally driven by ethical mission and vision of company
8	Endeavor to reduce company's impact on the environment through a commitment to continual improvement. Also, ISO standards specifically for safety and health for local manufacturing are considered	Driven by need of customer, feel that future is generally moving in the direction of sustainability. This is taken into consideration and will become more important in the future
9	Follow environmental standards as required by their country's government, and additionally follow environmental guidelines as guided by ICRC	Required by the Chinese government, and additionally they hope to improve their company for the long-run, and attract new customers
10	Follow environmental standards of parent company (located in Australia) as well as country's government. Additionally, follow environmental guidelines as guided by ICRC	Their company falls under a larger umbrella company from Australia which has an environmental focus as well as a focus on corporate social responsibility

Table 9. Current environmental considerations (supplier informants)

<i>Informant</i>	<i>Environmental considerations</i>
7	<ul style="list-style-type: none"> – Use of biodegradable paper in packaging and reduction of glue to ensure packaging can be disposed of properly in a refugee camp, or other field location – Research into take-back opportunities for solar lamps at end of product lifecycle
8	<ul style="list-style-type: none"> – Reduction of packaging for sanitation kits going to Nepal following the earthquake. Kits were packed into a reusable bucket, instead of a throwaway carton.
9	<ul style="list-style-type: none"> – Minimized required packaging needed to ship 15-piece kitchen set
10	<ul style="list-style-type: none"> – Alteration of product design which eliminates need for extra packing materials

5.1.3 RED CROSS AND SUPPLIER RELATIONSHIPS

Both Red Cross and Supplier informants were asked about their respective relationships with each other. This section contains the responses from both sets of informants.

COLLABORATION

All six of the Red Cross informants reported various levels of collaboration existing with suppliers when procuring relief items. Red Cross informants also utilized the word “partnership” to describe their relationship with the supplier. While one acknowledged that it is not a formal partnership, Red Cross Informant 5 stated, “Basically, I can't achieve anything on ground if I don't have the right support and the right spirit from the supplier coming in”. Of the six, only one Red Cross informant led their response with saying that it was more of just a “placing orders” relationship, but then followed with an example of when they had collaborated with a specific supplier to identify a customized solution.

Red Cross informants referenced supplier relationships were more collaborative in response to frequent purchasing, more complex and/or custom needs, as well as for complex field situations⁷. These situations called for framework agreements and relationship management schedules. Complexity of situation was noted as requiring collaboration over an extended period of time. Red Cross informants put forth the following situations leading to less collaboration (or collaboration not seen as required): one-off purchases, infrequent purchases, and simple consumable items. In addition, Informant 6 stressed the importance of working with suppliers/manufacturers versus traders, as traders are middlemen that cannot collaborate to directly change their product or service. All four supplier informants also reported collaboration as an important aspect of their relationship with the Red Cross and other customers.

Types of collaboration as reported by both Red Cross and supplier informants:

- Back and forth discussions for improving services or products taken into the field, leading to suppliers customizing product design and aid kit contents, or packaging to better meet the needs of the Red Cross. (All supplier informants and five of the six Red Cross informants)
- Inclusion of suppliers in Red Cross training operations to see how their items and equipment work in in the field. This was in connection to performance of ERUs (Red Cross informants 3 and 4)

⁷ Complex field situations were described as being driven by context, such as conflict zones, where issues related to transparency, neutrality and impartiality were magnified.

- Long-term supplier relationships where supplier alters (improves) various aspects of their company to fit guidelines of ICRC. (Red Cross informant 6 and supplier informants 9 and 10)
- Monitoring, feed-back obtained from humanitarian organizations in the field for how to improve products (Supplier informant 7)

POWER

The topic of power did not typically arise spontaneously when asking both groups of informants about their relationship. Only one Red Cross informant mentioned it with respect feeling they had sufficient purchasing power to source outside the IFRC catalogue. However, when asked about power, informants did respond. Specifically, two Red Cross National Society informants mentioned the Red Cross as having “power” due to its mission; specifically, the private sector likes to work with the organization because it makes the private company look good.

So, I think our biggest strength within procurement is our name, basically, and that is they [suppliers] enjoy, and it provides them with something to have Red Cross as a client and to be able to say that now, ‘We’re delivering these for the Red Cross. We sold this to the Red Cross,’ and so on. So, I think that’s rare. We have just as much or even more power than actually in our size and economical scale. (Informant 4)

Suppliers reported similarly about working with the Red Cross. Of final mention are supplier informants 9 and 10 in relation to their relationship to the ICRC, as they go through strict auditing to continue to be competitive and provide items for ICRC. This was considered very positive.

They [ICRC] will make sure that our company is very considerate about the environmental impact, so they can cooperate with us. (Informant 9)

WHAT HAPPENS TO PRODUCTS IN THE FIELD

Suppliers were additionally asked about their knowledge of how their products were used in the field, including end-of-life considerations. All four supplier informants reported knowing generally what the products were used in the field (e.g. buckets being used to transport and store water). One informant reported receiving feedback from United Nations High Commissioner for Refugees about how their solar lamps functioned in the field, which will allow them to create more customized products in the future. Another informant reported that while they do know what their product is designed to be used for, they did not know exactly how their product was used in the field.

5.2 FUTURE OF GREEN PROCUREMENT

5.2.1 RED CROSS RESPONSES

Analysis of the informants' responses regarding perceived considerations for implementation of a green procurement approach, including challenges and opportunities, indicated a variety of factors by the informants. These have been organized under the following themes which arose from analysis of the interview data (see Figure 15). Included in the figure below are totals for how many informants reported each theme.



Figure 15. Perceived key factors needed for implementation of green procurement

ORGANIZATIONAL CONSIDERATIONS

POLICY, GUIDELINES, AND STANDARDIZATION

All Red Cross informants reported the importance of having policy and guidelines in order to implement a green procurement approach, making it the most frequently mentioned factor. Informants reported that currently green efforts are fragmented and exist in ‘silos’ as there is not one formal push across the Red Cross Movement

One informant specifically referred to the current development of an environmental policy at the Federation level:

Looking forward to having, because it would be adopted at the Movement level and so it kind of trickles down and so then we would be able to say, “Well, this is what the movement is doing so let's do our best to build our models, fit our method of working into this model to follow this policy.” And then also eventually we could also see our own [national] environmental policy formalized, and not so much just do it because

we know it's in the back of our mind, but do it because we now have a policy.

(Informant 3)

Informants additionally noted the need for tools and guidelines, to direct how to green procurement:

Some kind of guidelines and things would be good. I mean, apart from just a general paragraph in our procurement policy saying that we should endeavor to do a list of five or six different points. There's is no real, I guess, guidelines on how to do so.

(Informant 1)

Standardization of products was also mentioned by informants. “Because to me, green is all about standardizing our product and getting the green aspect incorporated into what standard we define” (Informant 5). In connection to standardization within the IFRC emergency items catalogue, they further noted existing challenges:

So, it may have around close to 5,000 items, which have been standardized in that catalog, which are Federation standards. Most of those items are international standards. So, I think it takes a long time for us to design and agree on those standards, which are globally fit for the entire globe for the Red Cross Movement. So that all takes time. And I must say that, yes, this whole greening process has been in discussion for the last few years but there's not a lot of work that's being done because once again it needs time and resources. (Informant 5)

Informant 6 also discussed the importance of policy and standards, as they currently have the Quality-Social-Environmental assessments as developed for the ICRC, which was described as having “put them ahead” of where they previously were. They further reported that a vital aspect of implementation of global policies is a participative approach to management which contributes to continuous improvement through ongoing learning and adaptation.

KNOWLEDGE

Other highly mentioned topics by Red Cross informants pertained to staff knowledge to operationalize a green approach to procurement.

So, yes, in terms of looking at the procurement itself, I think definitely one of the challenges might be my own knowledge on this side of, I haven't done a huge amount of green procurement and looking at green products, so I don't know that side. There's a lot of knowledge, I think, within the movement, and also with other suppliers. ... So,

there's lots of people out there doing these kinds of things. So, whether there's a way of improving my knowledge to do that, to do my procurement more greener, I think that's one challenge. (Informant 2)

It's more a lack of knowledge and easy basic tools in order to do so. Like how much work can we put into looking into the environmental footprints of our tents, as an example. It's difficult. (Informant 4)

A specific piece of knowledge mentioned by informants was not knowing exactly what happens to, or the long-term impacts of, the products after in-field operations have ceased. This was mentioned by three Red Cross informants. Their concern was in connection to the life span and quality of their products, with two acknowledging they are aware their relief items are of a certain quality to last long after their organization has left the field.

HUMAN RESOURCES

Half of the Red Cross informants indicated a lack of staff, or staff with time, to devote to greening as a significant barrier to the inclusion of environmental considerations into their procurement practices. This includes a lack of time and expertise to initiate life-cycle analysis for products, packaging, and sourcing. Informant 5 stated that as part of the upcoming transition within the logistics unit of the IFRC, positions will exist that focus on item and packaging sourcing which they believe will lead to more collaboration and innovations with suppliers for end-of-life uses and other considerations.

ATTITUDES AND MINDSET

Informants reported various “attitudes” that may inhibit or promote adoption of green procurement practices.

People denying that there's currently an increased impact on the environment from things that humanitarian responders do. If there is denial of the problem, then there is not a need to find a solution.....We need to save lives. We need to make sure that these people will survive to see another day. But then you look at long term. Are we creating a problem long term by impacting the environment? (Informant 3)

We need to get more and more people saying, 'we need to do, we have to do it'. To get this idea of procurement and green procurement, as we say, sustainable procurement, it's not something new, but something that we have to do, something that we have no choice. (Informant 6)

OPERATIONAL CONSIDERATIONS

COST OF PURCHASING GREEN

Mentioned directly by four Red Cross informants as a barrier to adopting a green procurement approach are the assumed increased costs of purchasing items with a higher environmental standard. Attached to this was the reporting that increased costs would be an obstacle with donors, as their funding would not “go as far.” However, Total Cost of Ownership, the cost of a product throughout its lifecycle, was mentioned by Informant 6 as being an approach that companies and organizations are beginning to take in order to consider more than just the upfront cost of products, such as their maintenance and disposal.

PURCHASING POWER

Three informants indicate a lack of influence as being a potential hindrance when working with suppliers to green the items and services they are purchasing. This was attributed to the resources of their particular organization, as well as infrequent and minimal purchases. For example, Informant 2 indicated only needing to make specific purchases to replace ERUs once, every two to three years. A suggested solution to the lack of purchasing power, as presented by Red Cross informants, was collaboration and coordination with other Red Cross National Societies, IFRC and other large humanitarian organizations as a means to increase their purchasing power.

COORDINATION AND COLLABORATION

Another strongly appearing theme is related to the general coordination and collaboration across varying levels. Three of the four Red Cross National Society informants mentioned the possibility of collaborating and learning from their national procurement counterparts as a means to learn and improve green practices. National societies also conveyed importance of participation of all national societies to adopt the green approach with collaboration and direction from the IFRC. Three Red Cross informants noted a necessity for all major international humanitarian organizations to also green their operations to have a more significant impact. Otherwise, the green efforts of one organization could seem “wasted”. Informant 6 noted the existence of semi-annual meetings of quality managers between major humanitarian organization to exchange information about best practices.

TRANSPARENCY

Three Red Cross informants noted the importance of supply chain transparency, specifically acknowledging a need to know the “greenness” of suppliers, as well as a supplier’s current

position in the supply chain and how this impacts the supplier's level of influence on the supply chain. Informant 6 clearly stated,

“So, I would say that, to answer your question, that having direct and short supply chain will be one of the best solutions because the longer the supply chain, the higher the risk of environmental impact, social non-compliance and quality issues.”

(Informant 6)

They elaborated further regarding avoidance of working with traders as this typically indicates a long supply chain. While they can get you what you need, you do not know where it came from, how it was made because they are not the manufacturer.

AID STRATEGY

Red Cross informants reported the strategy used to distribute aid as influencing their ability to adopt a green approach. Procurement done in preparation for emergencies, such as pre-positioned emergency stock and ERUs, was seen as a positive entry point for greening as there was time to control the process through standardization and available resources. Unsolicited donations were noted as burdening the logistics systems, as the donations were required to be dealt with even though they may not be what is needed. Local purchasing was mentioned by three as contributing to less control of the procurement process.

Cash-based assistance was mentioned by three informants when responding to the question about the future of green procurement. However, the informants disagreed on whether cash-based systems contribute to greening the humanitarian supply chain. Two stated that cash provided the flexibility of not needing to fly goods via charter flight, so reduces transportation costs and emissions. They also reported it can support the local market, potentially in a way that reduces impact to the environment. In contrast, Informant 6 spoke about the loss of product control when working with cash systems and thus need for caution and evaluation of contextual appropriateness. This was exemplified through an occurrence of cash assistance provided to individuals to purchase kitchen sets locally following a disaster. After evaluating kitchen sets purchased, it was found that the cost was very high and the product was not safe, as it was possible to ingest paint chips. Further explaining that the lack of supply chain transparency for the items being purchased locally means that social and environmental aspects of the supply chain are unknown, as it is not regulated by the NGO.

END-USER AND PRODUCT END-OF-LIFE

Two informants reported consideration for end-users (beneficiaries) and product end-of-life to be important. Specifically, one discussed the issue of communication with beneficiaries about a green approach and what is trying to be accomplished with Green Response to insure the beneficiaries were “on-board” with the approach. Additionally, there was one mention of difficulty in tracking products through to the end-user to know what happened at the end of the product’s “life”. Informant 6 noted previous life-cycle assessments of various items that had been conducted, which was helpful in the procurement process, but this was time-consuming and therefore need to find time to incorporate this further.

5.2.2 SUPPLIER RESPONSES

When suppliers were asked about key factors contributing to greening the humanitarian supply chain, all responses were in connection to their position as a supplier. Specifically, they addressed their ability to meet the needs of the NGO, and what factors could support or inhibit this.

SUPPORTING FACTORS INCLUDED:

- Competitiveness within the market compelling them to be responsive to meet needs of the Red Cross
- Their own ethical stance toward the environment
- Their ability to innovate to find greener solutions
- Adoption of Total Cost of Ownership approach
- Two informants specifically mentioned opportunity for take-back schemes (reverse-logistics) for products as specific examples of opportunities for the future

INHIBITING FACTORS INCLUDED:

- Increased cost to produce greener products which may exclude the customer
- Geographical challenges (where manufactured) making use of biodegradable materials difficult
- Lack of existing recycling capabilities (where manufactured)
- Outside competition from other suppliers who could “green faster”, (Taking away current guidance provided by ICRC to improve their processes)
- Difficulty in implementing change in the supply chain

5.2.3 ROLE OF SUPPLIER IN MOVE TOWARD GREEN PROCUREMENT

When asked about the potential role of suppliers in a move toward green procurement the following responses were noted. (Note that some informants reported multiple roles for a supplier).

RED CROSS RESPONSES:

- Follow trend of sustainability and green their own supply chain as this will be an important factor to facilitating the Red Cross to have less environmental impact (Reported by three informants)
- Collaborate with Red Cross to identify better ways to handle various logistics tasks, such as warehousing, and even local suppliers to green and restore local supply chain
- Follow specifications and requirements provided by customer.
- Introduce green innovations and new technologies
- Take the role of leading greening efforts

It doesn't necessarily have to be us who's putting down all the requirements. I also think that suppliers can be proactive in saying 'no, we're taking steps to be greener', and we [Red Cross] would of course, weigh that into the procurement process. (Informant 3)

SUPPLIERS RESPONSES:

- Respond to needs of NGOs and adhere and be supportive of their specifications.
- Be a source for collaboration and sharing ideas to insure best possible option goes out into the field
- Promote new and innovative design that has less impact, and greater recyclability
- Be a source of information for sustainability as it may not be a core competency of an NGO, while it is one for the supplier.

If for example we can't be sustainable to a certain point without the UNHCR, for example, putting mechanisms in place so that we can achieve that, for example, take-back scheme or recycling. Then it's our role to make them aware of that, because we can't sit there and complain, "that's the situation", and not voice it, and not make sure they're aware of it. (Informant 7)

6 DISCUSSION

6.1 CURRENT ENVIRONMENTAL CONSIDERATIONS WITHIN RED CROSS PROCUREMENT PRACTICES

Overall, environmental considerations within procurement at the IFRC and Red Crescent National Societies can be summarized as somewhat fragmented. It was reported that no formal environmental policies guide the specification of products to reduce environmental impact at the international level⁸, and the existence of environmental considerations in policy at national levels did not have the supporting tools to enable follow through. Although this is the case, five Red Cross informants had examples of one-off procurement projects where they attempted to minimize environmental impacts of the products they were sending into the field. Primarily this was connected to reducing or eliminating packaging taken into the field, as they were aware of limited disposal or recycling opportunities, which is consistent with existing literature as noted in Section 4.1. The reduction of packaging appeared to be a highly visible issue, as it was known to five of the six Red Cross informants, and additionally they appeared to have the knowledge to make decisions to reduce packaging.

Supplier selection at global and some national levels was reported to include ethical and environmental requirements, however it was reported as being more of a ‘tick-the-box’ activity as Red Cross informants reported not having the resources to follow-up to ensure self-reporting by the suppliers was accurate. Environmental aspects were considered an add on to primary variables of cost, quality and appropriateness, and additionally seem to focus more on upstream environmental impacts such as pollution created during manufacturing versus environmental impacts in the field. While the inclusion of environment as a ‘tick-the-box’ activity appears to be better than nothing, as consistent with Hasselbalch et al. (2014b), it does not seem to have measurable effect, other than perhaps dissuading some suppliers from completing RFPs and RFQs.

Current motivation for greening appeared to be limited and inconsistent across responses, contributing to the overall fragmentation. The most agreed upon motivation for greening was reported to be coming from primarily external sources, such as donors. And if an informant did not have current support from donors, this was expressed as something that would be needed to implement a green agenda, supporting the need for designated resources for greening.

⁸ Informant 6 does note the Quality-Sustainability-Environmental sourcing policy; however, this seems to primarily be focused on the environmental impacts of upstream activities.

Surprisingly, accountability for beneficiaries was only mentioned once as a motivation for procurement of items with less environmental impact in the field. Suppliers were not noted as providing motivation for greening, as expressed by Red Cross informants.

As there were high levels of collaboration reported, and additionally examples of how packaging was being reduced through work with suppliers, at present, relationships with suppliers appear to be conducive to supporting green efforts. This was demonstrated through completion of previous projects to reduce packaging, such as the example of the redesign of the plastic buckets so that they would nest within each other for transport without getting stuck together, eliminating the need for individual packaging. This relationship will be elaborated on further in respect to the role of the supplier in green procurement.

6.2 KEY FACTORS FOR IMPLEMENTATION OF GREEN PROCUREMENT PRACTICES

A variety of factors were reported by informants as being important to adoption of green procurement as shown in Figure 15. These will be discussed further and elaborated upon in this section.

All Red Cross informants wanted policy to direct a green approach to procurement. This was by far the most frequently mentioned element needed. However, taking this into consideration, in combination with existing examples of national societies not being able to operationalize environmental elements of their policies, it is proposed that policy is only one needed element for effective implementation of a green approach to procurement. This coincides with some informant responses as well as literature (Hasselbalch et al., 2014b; Sarkis et al., 2012).

Green knowledge, guidelines and other tools were also mentioned frequently by Red Cross informants. This specifically included knowledge about long-term environmental impacts of the items they are purchasing and guidelines to describe how to prevent and/or reduce these environmental impacts through their actions. Therefore, important aspects to consider are: what knowledge is needed, where does this knowledge come from, and how is it transferred to those responsible for procurement? Again, these findings are supported by literature which found that access to information, knowledge, tools, training, education and communication are needed for implementation of green or sustainable practices (Hasselbalch et al., 2014b; Sarkis et al., 2012). Further implications from this finding include considerations for how learning can be incorporated on an ongoing basis and how procurement professionals will be able to evaluate and measure their “green results”.

As all Red Cross respondents reported using the IFRC/ICRC standards to guide product specification and selection for global emergency stock, it can be assumed that standardization, inclusive of product life-cycle implications is a key factor to greening procurement. When considering the benefits of standardization of emergency relief items, it is also important to take into consideration contextual factors of humanitarian response, as they can vary greatly from one disaster location to another (Eng-Larsson & Vega, 2011; Hasselbalch et al., 2014b; Sarkis et al., 2012). As each context that relief items are taken into is unique, then standardization of emergency relief items must be based on worst case scenarios for environmental situations, such as no existing recycling or waste management systems. While appearing to be very pertinent, standardization is not enough on its own, for example, when Red Cross National Societies conduct their own sourcing, outside of the IFRC, they must still have the proper systems and resources in place to properly vet and monitor supplier performance, something that was currently said to be lacking.

While the issue of available resources was primarily limited to a reported deficit in staff or staff time devoted for greening procurement practices, this underscores the broader issue of a lack of *all* resources dedicated to greening. Financial support for greening is important, specifically in a large organization as greening is unlikely to occur without funding and other resources dedicated to create policy, evaluate (life-cycle analysis) and standardize products, manage and communicate knowledge, create guidelines and other tools for implementation, and training. This is consistent with findings in the literature, including Sarkis et al. (2012), and Hasselbalch et al. (2014b) and Oberhofer et al. (2013).

This lack of resources and funding is also indicative of a lack of support by internal leadership and additionally donors to earmark funding, further demonstrating a lack of prioritization of greening. While leadership and direction was not specifically mentioned by Red Cross informants when asked about key factors to green, two informants made reference to the positive impact of senior management on implementation of a greening approach when discussing other issues. Therefore, it is proposed that it should be included as a key factor based on interpretation of findings from both interviews and supportive literature (Hasselbalch et al., 2014b; Sarkis et al., 2012).

Informants specifically noted attitude and mind-sets as being key factors to greening procurement. One specifically stating that the most important factor to greening was acknowledgement and non-denial of humanitarian organizations' possible impacts on the environment. Informants also mentioned the difficulty of altering their mindset to include long-

term impacts when focused on meeting immediate needs. This coincides with literature by (Hasselbalch et al., 2014b; Sarkis et al., 2012), though their focus is on lack of attitude and willingness to operate in a green way, resistance to change, and difficulty including greening/sustainability within the scope of mandates.

Building on the topic of attitude, all Red Cross informants, regardless of their familiarity with greening and the environment, had positive attitudes about the need to include the environment in procurement practices. While most likely not representative of all Red Cross procurement practitioners across the globe, it is descriptive of the willingness and enthusiasm that potentially exist. Therefore, while a top-down approach was suggested by nearly all Red Cross informants as being needed, through influence of policy and donors, a key factor requiring focus should be on the eagerness of the practitioner level to support the overall greening of procurement, as this is who will be following through with the directives of policy, guidelines and standardization. This builds on the concept of participative management, as described by a Red Cross informant as being integral to successful policy implementation.

Cost of purchasing green products was mentioned by four Red Cross informants as a barrier to greening, as it was assumed greener or more sustainable products would come at an increased cost. This was also mentioned by one of the supplier informants as being a concern as they could potentially make their product more sustainable, but the price point could increase to such a point that it could deter customers from purchasing. The issue of cost was also present in the literature reviewed (Hasselbalch et al., 2014b; Sarkis et al., 2012). Perhaps these perceptions of cost are driven by the current method of evaluation for products, which focus on their initial cost and quality, versus applying a life-cycle approach to evaluation like Total Cost of Ownership, as suggested by Informant 6 as well as Hasselbalch et al. (2014b).

Coordination and collaboration at varying levels were identified as being necessary to reduce humanitarian sector environmental impacts. This was specifically mentioned regarding coordination within the Red Cross Movement as well as with other responding humanitarian organizations. This implies that without all the major organizations working together, the likelihood of reducing environmental impacts is low. Both Sarkis et al. (2012) and Hasselbalch et al. (2014b) find a lack of coordination and collaboration to be a barrier. Sarkis et al. (2012) concluding that coordination between NGOs is needed, while Hasselbalch et al. (2014b) defines a lack of inter-agency collaboration on procurement issues as a barrier.

An additional aspect of collaboration at the inter- and intra-level was in connection to increasing the purchasing power of the Red Cross with suppliers. Some Red Cross National Society

informants reported feeling they did not have the necessary influence over suppliers to green their products due to size of their organization, or due to purchasing small and infrequent quantities. This was not the case for Informant 6 with the ICRC, which is attributed to their position as purchasing for the entire global operation. While Red Cross informants also acknowledged having some influence over suppliers in connection to the reputation of the Red Cross, through coordination and collaboration it seems reasonable they will be likely to further influence suppliers, especially the National Societies, as findings indicate they are the ones this affects the most.

Transparency within the supply chain was specifically mentioned as being important to greening procurement. This can be attributed to a perceived need for control to ensure that environmental standards are upheld throughout the supply chain, from raw materials extracted all the way to the end-user. The shorter the supply chain, the higher the transparency, thus working directly with suppliers who are also the manufacturer is ideal. This need for control of product and process was also present through informants mentions of various aid strategies, specifically pre-positioning of stock, which allows for high control, and cash-systems, having low transparency due to lack of control. This mention of cash-systems was an unanticipated aspect of the interview process with the Red Cross informants.

Cash-systems give control of products purchased to the affected individuals. This is beneficial to the recipients, as they can decide how to best meet their own needs, and the environment through reduction of emissions from transportation. However, it also creates a loss of control of what is being purchased. Implications being that as trends in cash systems are increasing, control of products purchased is lost, possibility causing negative environmental impacts throughout their life-cycle. While the issue of supply chain transparency was not specifically mentioned in the literature reviewed, it connects in some respect to a barrier as identified by Hasselbalch et al. (2014b) regarding a lack of sustainable goods in local markets as hindering sustainable procurement practices.

Another unexpected result was the few mentions of beneficiaries (end-users) and end-of-life for products as key factors to greening. The latter of which could be attributed to the disconnect mentioned by informants in tracking products to the end-user to know what happened at the end of a product's life. To fully execute a green approach to procurement, and mitigate potential waste management issues, the role of the beneficiaries in the supply chain should be considered, as they will be the ones utilizing the products in the field and; therefore, play a role in end-of-

life activities. Additionally, product end-of life considerations should be understood, requiring evaluation, such as life-cycle analysis (Oberhofer et al., 2013)

While not included in direct responses about key factors to greening, Red Cross informants did mention the unique position of the beneficiary in the humanitarian supply chain when discussing their general procurement responsibilities. They explained that beneficiaries do not directly determine what goods are purchased, nor pay for them, as this is decided by the humanitarian organization and funded by a third party, the donors. The literature presents this as a potential issue of matching supply with demand (Eng-Larsson & Vega, 2011; Peretti et al., 2015). As the beneficiaries are considered as creating demand, but do not have control over what is being purchased, there is potential for needs not being met with appropriate response, which could contribute to a variety of issues, including excess waste (Peretti et al., 2015).

6.3 SUPPLIER ROLES IN ADOPTION OF GREEN PROCUREMENT PRACTICES

Both sets of informants reported varying roles that suppliers could take in the adoption of a green approach to procurement. These can be roughly categorized into reactive and proactive roles as described in Figure 16.

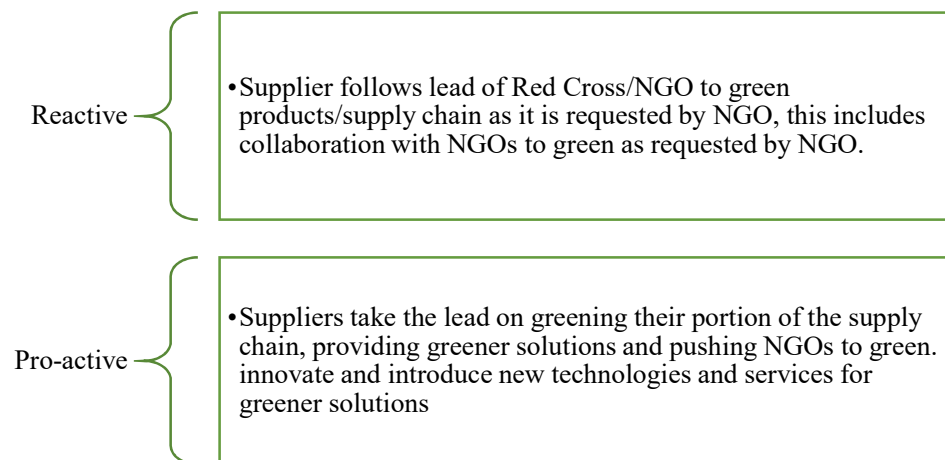


Figure 16. Supplier roles

These roles are consistent with the current relationships that exist between the Red Cross and their suppliers as described by informants, specifically the ‘levels’ of collaboration reported by both Red Cross and supplier informants. Roles are additionally consistent with reporting by supplier informants about their current inclusion of environmental considerations, implying that the “greener” the supplier reported being, the more pro-active roles they described as being able to take in assisting NGOs to green procurement in the future. Furthermore, the roles as

expressed by both sets of informants align. For example, Red Cross informants responded that suppliers can take the role to lead greening efforts, and one supplier reported their role was to be a source of information for sustainability. While not a separate role, Informant 6 with the ICRC further highlighted the process of actively seeking out suppliers in the private sector versus through standard RFP processes. This opens opportunities to work with new companies and allows an organization to craft the supplier they want to have. This was consistent with responses from their suppliers, and highlights the importance of the sourcing process and customer relationship to form the best possible green results.

Supplier informants noted factors supporting and inhibiting them from fulfilling their role to green. Supporting factors varied greatly between suppliers, ranging from their own ethical concerns for the environment, to being driven to green by external competition. An interesting finding is the crossover between the reported supporting and inhabiting factors. For instance, one supporting factor was competition with other suppliers which would push their company to green to maintain current as well as attract new customers. In contrast, a challenge was losing their position supplying for the Red Cross if they were not able to keep up with the competition to “green.” Whether looking at this from a positive or negative standpoint, this study highlights that competition to green could be considered positive, and not as limiting competition of the supply base as concluded by Hasselbalch et al. (2014b). However, the issue of who the customer is, IFRC/ICRC, and incentives for being their supplier should not be ignored in this context, such as reputation of supplying the Red Cross, and purchasing power of the customer

Reverse-logistics, or “take-back” programs, was also presented both an opportunity and a challenge. Two suppliers discussed that take-back programs were something they are capable of doing with their private-sector customers, but do not currently with the humanitarian sector. The primary challenges, as eluded to by the supplier informants, stemmed from the varied locations in which humanitarian operations occur, and the acknowledgement that humanitarian organizations probably do not have the time and resources to execute such a program. Nevertheless, findings from suppliers indicate a willingness of the private sector to consider the introduction of reverse-logistics into the humanitarian context as an approach to reducing environmental impact, an opportunity discussed by Battini et al. (2016); Peretti et al. (2015); Sarkis et al. (2012). However, the current description of logistics and procurement functions within the Red Cross are not explicitly inclusive of reverse flows, suggesting a lack of current consideration within the organization, which would be needed to facilitate such an endeavor.

Another challenge that arose from the interviews was in connection to supplier knowledge of their products' usage and end-of-life handling. While it was reported that some of the Red Cross informants included suppliers in training exercises using complex equipment, suppliers of simple items, like the buckets and kitchen sets did not seem to have detailed knowledge of how their products are specifically used in the field, or perhaps how products are being alternatively used, re-used, recycled, or even disposed. Therefore, while high levels of collaboration were reported, there seems to be opportunity for further exchange on simple emergency relief items that are frequently used in the field to align knowledge on both sides of the relationship.

In summary, all suppliers interviewed can be noted as agreeable to greening, and taking various roles to do so. Perhaps working with pro-active suppliers may assist in greening as there is access to their knowledge and expertise, while working with the more re-active suppliers may require additional direction and resources from the Red Cross to achieve green goals. Therefore, it can be concluded that the sourcing process is a strategic opportunity to evaluate and select suppliers that fill the desired green role.

6.4 SUMMARY

In summary, by taking into consideration the results and their analysis, it is then possible to address the question: How can the International Federation of the Red Cross and Red Crescent Societies effectually implement a green approach to procurement? Table 10 summarizes the key factors to be considered, as found during the course of this study. This list does not presume to be exhaustive of all possible considerations, and should therefore be viewed as a starting point for further investigation.

Table 10. Summary of discussion and results

<i>Organizational considerations</i>	Policy	Policy should be inclusive of environmental aims.
	Leadership	Support from leadership and those in management positions for greening is needed to motivate implementation.
	Resources	Resources should be devoted to greening, this includes funding, staff, time, etc. This also implies support of donors.
	Knowledge	Procurement practitioners and other Red Cross staff need access to knowledge that will assist them to implement green procurement practices; therefore, considerations are needed for: what knowledge is needed, where knowledge comes from, and how is it transferred to those responsible for procurement.
	Item standardization	Standardization should be inclusive of environmental considerations, like life-cycle, and specifically end-of-life implications.
	Guidelines and Tools	Guidelines and tools are needed to communicate how to green procurement practices. This should be inclusive of considerations for continuous learning, monitoring and evaluation.
	Attitudes and mindset	Positive attitudes toward greening are needed within the organization. Mindsets should be open to inclusion of long-term impacts as well as short-term needs. Existing enthusiasm for greening, and the individual level, should be harvested and used to support top-down greening efforts.
<i>Operational considerations</i>	Cost evaluation strategy	Strategy for sourcing and specifying products should take into account environmental considerations, such as through strategies that evaluate long-term (life-cycle) costs.
	Purposeful sourcing	When selecting suppliers, the Red Cross should take into consideration what role they need the supplier to fulfill towards greening: do they need the supplier to be pro-active and take the lead in greening, or do they need the supplier to follow an established green standard.
	Coordination and collaboration	Coordination and collaboration on greening procurement within the Red Cross Movement and with other humanitarian organizations should be considered to reduce environmental impacts. This may also be an opportunity to increase <i>purchasing power</i> to influence suppliers to green.
	Supply chain transparency	Transparency within the supply chain should be considered a priority as this allows an NGO to have better visibility and control of green efforts. Aid strategy, such as cash-transfer systems are perceived to have less transparency for items purchased potentially affecting environmental outcomes.
	End-user and product end-of-life	Beneficiaries should receive consideration as an active part of the supply chain, as they will be the ones utilizing the products in the field and therefore play a role in end-of-life activities. As proposed by suppliers, additional end-of-life considerations, such as reverse-logistics/take-back programs can be explored as further opportunities to green.

7 CONCLUSION

Each year millions of people receive emergency relief items from the IFRC and Red Cross National Societies. Primary environmental concerns associated with these relief items in the field were identified as stemming from poor end-of-life product management, including unwanted emissions to the land, air and water. Through mainstreaming of the environment, like the Green Response approach, organizations like the IFRC seek to mitigate and prevent these negative impacts. As logistics plays a large role in fulfilling the mission to save and protect lives, its functions, like procurement, become obvious targets for the inclusion of green considerations. However, this will require great effort on the part of the organization and its supply chain in order to fully implement a green approach to procurement.

This research has sought to identify key considerations for implementing a green approach to procurement of relief items to prevent environmental impacts caused or exacerbated by humanitarian operations. This was achieved through investigation and answering of the following research questions as summarized below:

- *What environmental impacts are associated with emergency relief items in the field?*

Findings from the literature review indicate inadequate waste management leading to harmful emissions to air, land, and water as the primary negative environmental impacts associated with emergency relief items in the field. Specific sources of waste from humanitarian operations include discharge of packaging from relief items, operation and maintenance of equipment, and end of the life-cycle of equipment and relief items.

- *Are environmental considerations currently included in procurement practice within the IFRC, including National Societies?*

Results from the interviews indicate that while environmental considerations, such as the reduction or elimination of packaging, are currently included in procurement practice within the IFRC, efforts are extremely fragmented as there is not yet a formal approach to inclusion of the environment at the Federation level.

- *What are perceived by humanitarian procurement practitioners and suppliers as key considerations for implementation of a green approach to procurement?*

Red Cross procurement experts specified several key factors for implementation of a green approach to procurement. These factors included implications for change within the organization and along the supply chain. Supplier responses unsurprisingly focused on their

portion of the supply chain, providing information valuable to evaluating the role of the supplier in greening the supply chain.

- *What role(s) can a supplier play in adoption of green procurement practices?*

Potential supplier roles fell into two main categories, proactive and reactive, indicating a need for purposeful sourcing to identify what role a humanitarian organization wants, needs, and expects a supplier to play in greening of the supply chain.

Analysis of these findings resulted in a list of twelve key considerations for how the IFRC and Red Crescent Societies can effectually implement a green approach to procurement. Specifically, the environment must receive attention within: policy, leadership, resources, knowledge, item standardization, guidelines and tools, attitudes and mindsets, cost evaluation strategy, sourcing, coordination and collaboration, supply chain transparency, and finally, end-user and product end of life. This lengthy list is indicative of the complex nature of environmental mainstreaming within an organization and its operations.

Practical implications are for this study to be reviewed by the Red Cross as they begin to implement the Green Response approach to see if these findings align with their general efforts to mainstream the environment, as well as with operational planning within logistics functions. As this research was a case study within the Red Cross and Red Crescent Movement, not all its lessons will necessarily be applicable to other organizations. However, findings indicate some overlap with existing studies, which could be indicative of the applicability of this study in a wider context.

While this research has begun to address the gap in academic literature addressing humanitarian operations and connected environmental impacts, it has also highlighted further gaps. Areas in need of further research include: additional focus on environmental impacts of humanitarian response; mainstreaming of the environment in humanitarian organizations; green and sustainable humanitarian supply chains, specifically green procurement within the humanitarian context; and, as cash systems begin to become more popular as an aid delivery mechanism, research into environmental impacts of local purchasing in connection to cash-transfer systems. What can be highlighted from these gaps in research is a lack of connection between the humanitarian and academic community, as many of these areas of research would rely heavily on data derived from field and other operational activities.

In conclusion, each year there are an increasing number of catastrophes and crises requiring international aid, all relying on logistics functions, including procurement to meet the needs of

affected populations. As people will continue to need assistance, aid will continue to be purchased; therefore, potential environmental implications are indefinite unless opportunities for intervention are exploited.

REFERENCES

- Abrahams, D. (2014). The barriers to environmental sustainability in post-disaster settings: A case study of transitional shelter implementation in Haiti. *Disasters*, 38, S25-S49.
- Barrett, E., Murfitt, S., & Paul, V. (2007). *Mainstreaming the environment into humanitarian response*. Retrieved 10 January 2017 from <https://www.gdrc.org/uem/disasters/disenvi/erm-meha.pdf>
- Battini, D., Peretti, U., Persona, A., & Sgarbossa, F. (2016). Sustainable humanitarian operations: Closed-loop supply chains. *International Journal of Services and Operations Management*, 25(1), 65-79.
- Coppola, D. P. (2011). *Introduction to international disaster management*. (2nd ed.): Amsterdam : Butterworth-Heineman.
- Eng-Larsson, F., & Vega, K. (2011). Green logistics in temporary organizations: A paradox? Learnings from the humanitarian context. *Supply Chain Forum: An International Journal*, 2(12).
- European Commission. (2016). *Buying green handbook*. Retrieved 10 February 2017 from <http://ec.europa.eu/environment/gpp/pdf/Buying-Green-Handbook-3rd-Edition.pdf>
- Flowerdew, R. & Martin, D. (2005). *Methods in human geography: a guide for students doing a research project*. Pearson Education Limited: Essex, England.
- Green Recovery and Reconstruction Toolkit. (2010). *Opportunities for green recovery and reconstruction*. Retrieved 10 January 2017 from <http://envirodm.org/training/eng/opportunities-for-green-recovery-and-reconstruction>
- Hasselbalch, J., Costa, N., & Blecken, A. (2014a). Examining the relationship between the barriers and current practices of sustainable procurement: A survey of UN organizations. *Journal of Public Procurement*, 14(3), 361-394.
- Hasselbalch, J., Costa, N., & Blecken, A. (2014b). Investigating the barriers to sustainable procurement in the United Nations. In M. Klumpp, S. Leeuw, A. Regattieri, & R. Souza (Eds.), *Humanitarian Logistics and Sustainability* (pp. 67-86): Cham: Springer International Publishing.
- Holmberg, J. (1998). Backcasting: A natural step in operationalising sustainable development. *Greener Management International*(23), 30.
- IFRC. (2009). Supplier registration form. Retrieved 07 February 2017 from <http://www.ifrc.org/en/what-we-do/logistics/procurement/suppliers/>
- IFRC. (2013). *Green Response practice note Haiti Earthquake and El*. Retrieved 29 November 2016 from <http://adore.ifrc.org/Download.aspx?FileId=50829&.pdf>
- IFRC. (2015). *IFRC annual report 2015*. Retrieved 16 June 2017 from http://www.ifrc.org/Global/Documents/Secretariat/201610/IFRC%20Annual%20Report%202015-EN_LR.pdf
- IFRC. (2016). Green Response snapshot. In International Federation of the Red Cross and Red Crescent Societies (Ed.).

- IFRC. (2017a). Emergency items catalogue. Retrieved 12 April 2017 from <http://itemscatalogue.redcross.int/>
- IFRC. (2017b). ERU. Retrieved 14 July 2017 from www.ifrc.org/eru
- IFRC. (2017c). ERU frequently asked questions. Retrieved 14 July 2017 from <http://www.ifrc.org/en/what-we-do/disaster-management/responding/disaster-response-system/dr-tools-and-systems/eru/frequently-asked-questions/>
- IFRC. (2017d). Logistics. Retrieved 14 July 2017 from www.ifrc.org/en/what-we-do/logistics
- IFRC. (2017e). The Movement. Retrieved 01 August 2017 from <http://www.ifrc.org/en/who-we-are/the-movement/>
- IFRC. (2017f). Procurement portal. Retrieved 01 March 2017 from <http://www.ifrc.org/en/what-we-do/logistics/procurement/>
- IFRC. (2017g). Scope of services. Retrieved 16 April 2017 from <http://www.ifrc.org/en/what-we-do/logistics/procurement/supply-services/>
- IFRC. (2017h). Services for the disaster-affected: Relief. Retrieved 17 August 2017 from <http://www.ifrc.org/en/what-we-do/disaster-management/responding/services-for-the-disaster-affected/relief/>
- IFRC. (2017i). What is a disaster? Retrieved 13 August 2017 from <http://www.ifrc.org/en/what-we-do/disaster-management/about-disasters/what-is-a-disaster/>
- IFRC and Swedish Red Cross. (2017). *Green emergency response - concept and guidelines (Unpublished)*.
- International Institute for Sustainable Development. (2017). Green procurement. *IISD's Business and Sustainable Development: A Global Guide*. Retrieved 05 May 2017 from https://www.iisd.org/business/tools/bt_green_pro.aspx
- International Organization for Standardization. (2006). *International standard ISO 14040: Environmental management, life cycle assessment, principles and framework* (2nd ed.): Geneva: International Organization for Standardization.
- Jahre, M., Pazirandeh, A., & Van Wassenhove, L. (2016). Defining logistics preparedness: A framework and research agenda. *Journal of Humanitarian Logistics and Supply Chain Management*, 6(3), 372-398.
- Logistics Cluster. (2015a). Logistics operational guide: Procurement. Retrieved 22 June 2017 from <http://dlca.logcluster.org/display/LOG/Procurement>
- Logistics Cluster. (2015b). Stock repositioning. Retrieved 01 August 2017 from <http://dlca.logcluster.org/display/LOG/Stock+Repositioning>
- Mainka, S., A., & McNeely, J. (2011). Ecosystem considerations for postdisaster recovery: Lessons from China, Pakistan, and elsewhere for recovery planning in Haiti. *Ecology and Society*, 16(1), 13.
- Oberhofer, P., Blanco, E. E., & Craig, A. J. (2013). Carbon Efficiency of Humanitarian Supply Chains: Evidence from French Red Cross Operations. In J. Dethloff, H.-D. Haasis, H. Kopfer, H.

- Kotzab, & J. Schönberger (Eds.), *Logistics Management: Products, Actors, Technology - Proceedings of the German Academic Association for Business Research, Bremen* (pp. 53-66). Cham: Springer International Publishing.
- Peretti, U., Tatham, P., Wu, Y., & Sgarbossa, F. (2015). Reverse logistics in humanitarian operations: challenges and opportunities. *Journal of Humanitarian Logistics and Supply Chain Management*, 5(2), 253-274.
- Sarkis, J., Spens, K. M., & Kovács, G. (2012). A study of barriers to greening the relief supply chain. In G. Kovács & K. M. Spens (Eds.), *Relief Supply Chain Management for Disasters: Humanitarian Aid and Emergency Logistics* (pp. 196-205). Hershey, PA: IGI(Global).
- Srinivas, H., & Nakagawa, Y. (2008). Environmental implications for disaster preparedness: lessons learnt from the Indian Ocean Tsunami. *J Environ Manage*, 89(1), 4-13.
- The Sphere Project. (2011). *Humanitarian Charter and minimum standards in humanitarian response*. Retrieved <http://www.sphereproject.org/handbook/>
- UNEnvironment. (2014). *Environmental Marker*. Retrieved <https://www.humanitarianresponse.info/topics/environment/document/environment-marker-guidance>
- UNEnvironment, & United Nations Office for the Coordination of Humanitarian Affairs. (2014). *Environment and humanitarian action: Increasing effectiveness, sustainability, and accountability*. Retrieved
- United Nations. (2015). *Sendai framework for disaster risk reduction*. Retrieved 10 January 2017 from http://www.unisdr.org/files/43291_sendaiframeworkfordrren.pdf
- Van Wassenhove, L. N. (2006). Humanitarian aid logistics: supply chain management in high gear. *Journal of the Operational Research Society*, 57(5), 475-489.

APPENDIX A - SEARCH TOOLS AND TERMS

ONLINE RESEARCH TOOLS

<i>Description</i>	<i>URL</i>
<i>LubSearch</i>	http://www.lub.lu.se/en/search-systems-and-tools/lubsearch
<i>Google search</i>	https://www.google.se

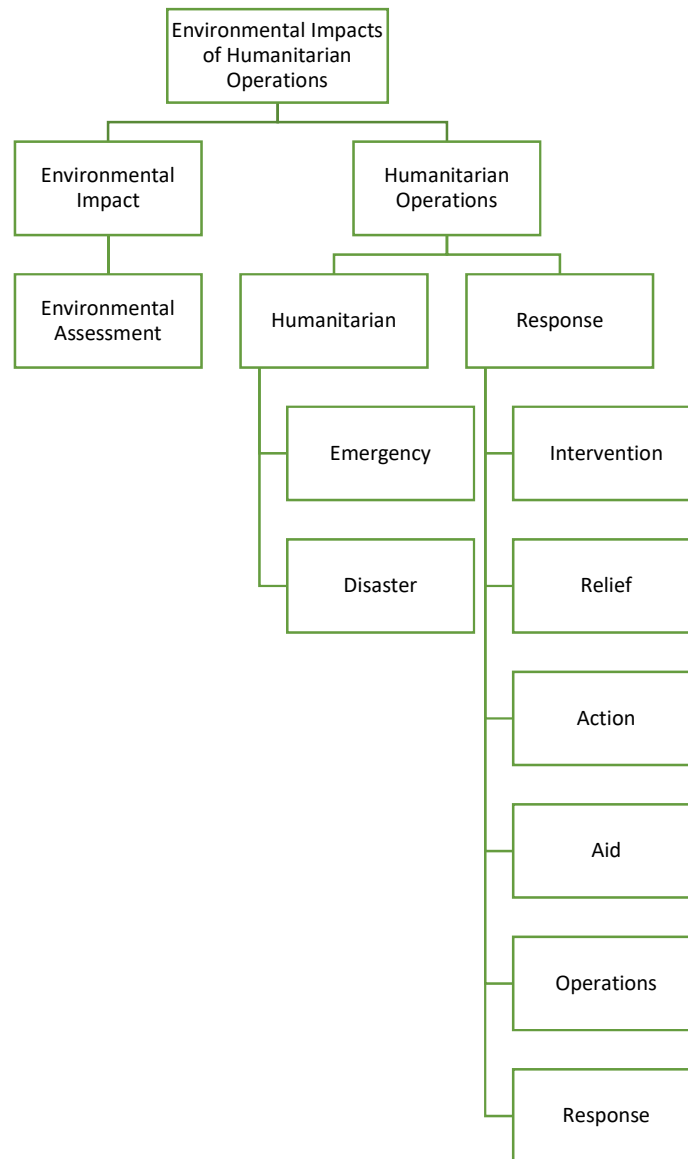
SEARCH TERMS FOR LITERATURE REVIEW

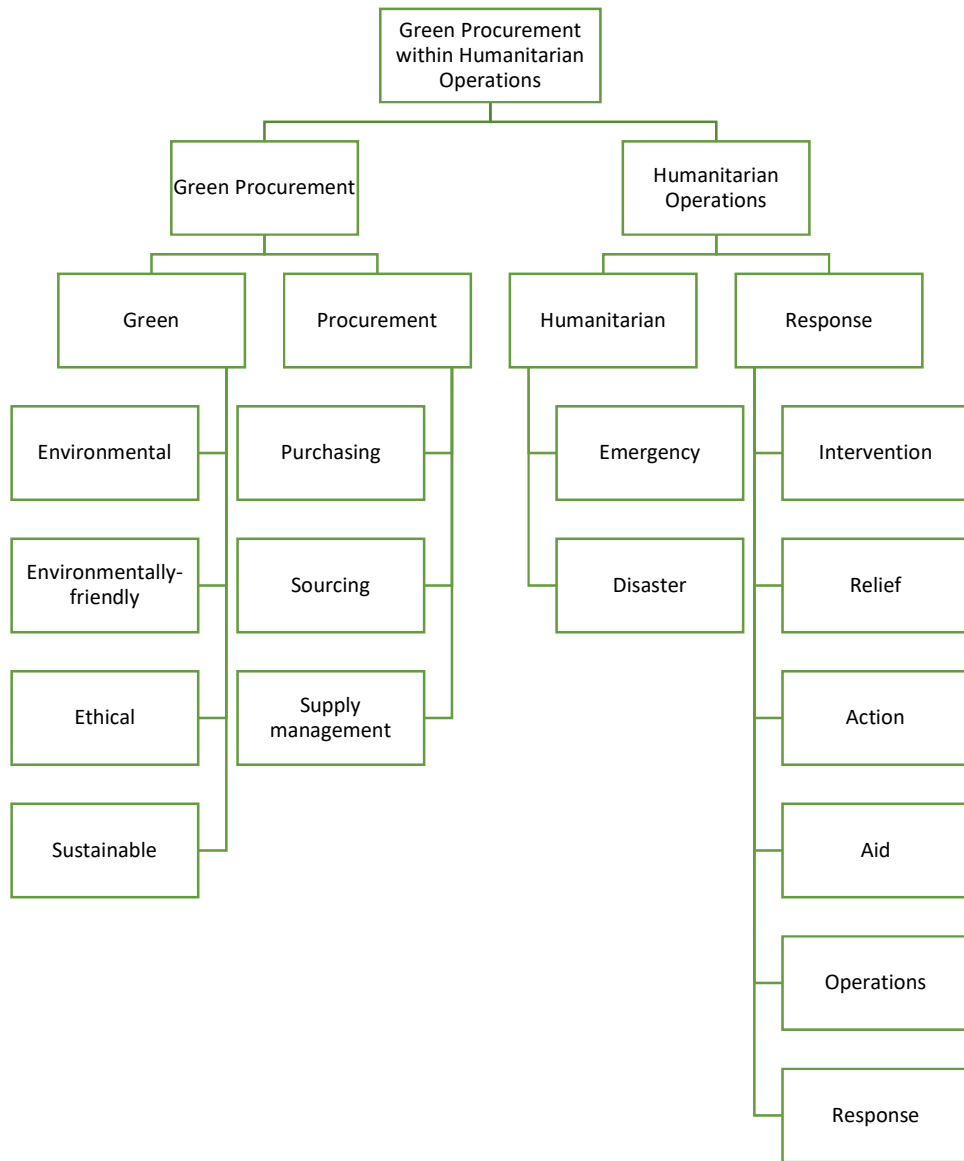
<i>Heading</i>	<i>Search Terms</i>	<i>Operator</i>	<i>Search Terms</i>
<i>Environmental impacts of humanitarian operations</i>	Environmental impact or Environmental assessment	And	Humanitarian intervention or Humanitarian relief or Humanitarian action or Humanitarian operations or Humanitarian response
<i>Green procurement within humanitarian operations</i>	Green procurement or Green purchasing or Green sourcing or Green supply management or Environmental procurement or Environmental purchasing or Environmental sourcing or Environmental supply management or Sustainable procurement or Sustainable purchasing or Environmental sourcing or Sustainable supply management	And	Humanitarian response or Humanitarian operation or Humanitarian action or Humanitarian response or Humanitarian logistics

DATABASES

GreenFile
 Lovisa
 Political Science Complete
 Science Direct
 Scopus

Initially, the literature review cast a wide net to capture all potential relevant peer-reviewed literature connecting the terms “environmental impact” with “humanitarian operations”, and “humanitarian operations” with “green procurement”. This included utilization of several key words that could be considered synonymous with these terms. A detailed list of terms and their relationships can be found in the diagrams below.





APPENDIX B - RED CROSS INTERVIEW GUIDE

<i>Modified Backcasting</i>	<i>Interview Questions</i>
<p>2) <i>Context and current “state of procurement”</i></p>	<p>Q1. What are your general responsibilities?</p> <p>Q2. What are the organizational and/or geographical boundaries for this RC’s procurement activities?</p> <p>Q3. Are there standard procurement policy documents?</p> <p>Q4. Who specifies/requests the products/items?</p> <ul style="list-style-type: none"> – Are considerations for environmental impact taken into account at this point, such as packaging reductions, or use of chemicals (plastics), durability, recyclability (or other end-of-life considerations)? – Are there currently any motivators for specifying and purchasing “greener”? (Policies, donors, internal or external champions, etc.) <p>Q5. How are suppliers selected?</p> <ul style="list-style-type: none"> – Are considerations for environmental impact taken into account at this point, such as packaging reductions, or use of chemicals (plastics), durability, recyclability (or other end-of-life considerations)? <p>Q6. How would you describe current relationships with suppliers?</p> <ul style="list-style-type: none"> – For instance, are they a source for placing orders (just there to meet demand), or perhaps you collaborate to find/develop solutions together, etc.). – Do suppliers ever suggest alternatives to what you have requested (performance, quality, etc.) – Is there any type of power dynamic that you can sense between Red Cross and your suppliers?
<p>3) <i>Vision for the future</i></p>	<p><i>Vision of desired future was provided as the lead-in to the interview in Q7.</i></p>
<p>4) <i>Perceived key factors for implementing green procurement</i></p>	<p>Q7. Assuming the desired future of procurement is ‘green’, what are key aspects that will support your organization to adopt/implement?</p> <ul style="list-style-type: none"> – Challenges and Opportunities? <p>Q8. Do you see suppliers playing a role in a move toward “greener” procurement? If so, what is that role/relationship?</p>
<p><i>Other Questions:</i></p>	<p>Q9. My plan is to interview/survey suppliers as well, asking similar questions about their side of the sourcing process. Do you have suppliers who would participate?</p>

APPENDIX C - SUPPLIER INTERVIEW GUIDE

<i>Modified</i>	<i>Interview Questions</i>
<p>2) <i>Context and current “state of procurement”</i></p>	<p>SQ1. Company information</p> <ul style="list-style-type: none"> – What types of products do you specialize in? – Who are your typical customers (non-governmental organizations, for-profit sector, etc.)? <p>SQ2. Are there currently considerations for environmental impact of products? This could include considerations for packaging, use of chemicals (plastics), durability, recyclability or other end-of-life considerations?</p> <ul style="list-style-type: none"> – Are there any specific environmental guidelines your company currently follows (such as ISO Standards)? <p>SQ3. How long have you been a supplier for the Red Cross and/or other humanitarian response organizations, and what types of products do you supply for this sector?</p> <ul style="list-style-type: none"> – Collaboration? – Do you know how your products are used by the end-user?
<p>3) <i>Vision for the future</i></p>	<p><i>Vision of desired future was provided as the lead-in to the interview in SQ4.</i></p>
<p>4) <i>Perceived key factors for implementing green procurement</i></p>	<p>SQ4. Assuming the desired future of procurement for Humanitarian Response Organizations (like the Red Cross) seeks to lessen environmental impact of products used when responding to disasters.....</p> <ul style="list-style-type: none"> – From your perspective as a supplier, are there any specific opportunities or challenges to supporting a client, like the Red Cross, as they move in this “greener” direction? – “A common argument in this context is that not taking environmental responsibility might add to the burden of the responding organizations how do you feel about that?” <p>SQ5. What do you see as the role of suppliers in a move toward “green” procurement by your clients?</p> <ul style="list-style-type: none"> – Is there any specific information you would likely need from the Red Cross to fill this role?

APPENDIX D - INTERVIEW ANALYSIS AND CODING

<i>Red Cross Interview Analysis</i>	<i>Supplier Staff Interview Analysis</i>
<p>Q1. General responsibilities</p> <p>Q2. Organizational and/or geographical boundaries of procurement</p>	<p>SQ1. Company and customer information</p>
<p>Q3. Standard policies followed</p>	<p>SQ2. Standard policies followed</p>
<p>Q4. Product specification including considerations for environmental impact and motivators for “green” specification”</p>	
<p>Q5. Supplier selection</p> <ul style="list-style-type: none"> – Current consideration for environmental impact 	<p>SQ2. Current considerations for environmental impact of products</p>
<p>Q6. Description of relationships with suppliers</p>	<p>SQ3. Description of relationships with and services/products provided for Red Cross and other humanitarian response organizations</p>
<p>Q7. Key aspects that will support organization to adopt/implement green procurement practices</p> <ul style="list-style-type: none"> – Policy, guidelines and standardization – Knowledge – Attitudes and mindset – Human resources – Cost of purchasing green – Purchasing power – Coordination and collaboration – Transparency – Aid strategy – End-user and product end-of-life 	<p>SQ4. Opportunities or challenges to supporting customer as they move in this “greener” direction</p> <ul style="list-style-type: none"> – Opportunities – Challenges
<p>Q8. Role of supplier in a move toward green procurement</p>	<p>SQ5. Role of supplier in a move toward green procurement and information needed from humanitarian organizations to fill this role</p>
<p>Q9. Suppliers who would participate in research</p>	