

# Chapter 83

## A Study of Barriers to Greening the Relief Supply Chain

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### ABSTRACT

*Relief supply chain (SC) management is a relatively unexplored field. In this field, practitioners have shown some interest in greening practices, but little practical or academic literature exists to help provide insights into combining the two fields. Adoption of green SC principles in the relief SC requires a systematic study of existing barriers in order to remove these barriers and allow introduction of green practices. The aim of this chapter is to explore barriers to implementation of green practices in the relief SC. Expert opinions and literature from humanitarian logistics and green supply chain management are used to establish a list of barriers and to propose a categorization of barriers. Further research to evaluate the relationships and importance of these barrier factors is identified.*

### INTRODUCTION

Supply chain management requires the planning, design, implementation, coordination and maintenance of various flows across many boundaries. Supply chain social responsibility has received increased interest over the past decade. One aspect of socially responsible supply chains includes their application and management for humanitarian pur-

poses. Another important dimension of the socially responsible supply chains is the greening aspect, or green supply chain management. Separately these two topical disciplines have seen a paralleled growth and interest by practitioners and researchers. Even though numerous researchers have been investigating sustainable supply chains, where the term sustainable includes social, economic, and environmental dimensions, it is surprising that the intersection of these inchoate fields has yet to be carefully examined. Therefore, in this chapter

DOI: 10.4018/978-1-4666-2625-6.ch083

the two fields, green supply chain management (GSCM) and relief supply chain management are integrated through a study on barriers to greening the relief supply chain.

Relief supply chain management is a relatively new area of investigation which is typically associated with unexpected disasters that require immediate action. As stated by Kovács and Spens (2007), recent humanitarian logistics literature also focuses on disaster relief, yet, most relief supply efforts can be attributed to longer term effects, especially those situations which result from war and famine (Hoerz, 1997). One good example is refugee camps, which may last for years and need effective long-term and short-term operational planning. The burden on the environment is of such a magnitude that comments such as “the UNHCR [aka The UN Refugee Agency] has destroyed our environment” have been cited (Hoerz, 1997). A general list of potential environmental impacts associated with water and related activities in a camp situation include the

- Depletion of the source as a result of unsustainable extraction or collection of water.
- Contamination of the local water due to improper disposal of waste water and human-waste, faulty design and operation/maintenance of the piped water network, excessive extraction of groundwater and other related activities in the camp.
- Impacts to local environment due to construction and operation of water supply system intensity and magnitude of which would largely depend on the nature and size of the project and the sensitivity of the local ecosystem.
- Inappropriate drainage, soil and water conservation measures as well as poor water management in irrigation systems may lead to erosion, floods, groundwater contamination and soil salinization.

- Camps or settlements close to open streams or over unconfined aquifers may cause downstream contamination.

Inside Haiti, more than two months after the 2010 earthquake, it was reported by the BBC that some areas had yet to receive humanitarian supplies. When some of these supplies arrived in a community not too far from the epicenter of the 2010 earthquake, they came in many forms. One set of supplies included military rations (Meal, Ready to Eat, MRE). These rations were culturally inappropriate due to their ‘individual’ nature and containing non-traditional, to Haitians, foods. It was expected that many of these MRE would be discarded. Important from an environmental perspective, is that these MREs came in hard plastic containers. It was observed in the BBC radio that piles of green plastic, hazardous and not easily disposable, existed as over 250,000 MREs were delivered to Haitians. Given this type of scenario, one suggestion to reduce the impact of camps on the environment has been to involve refugees in the battle against this environmental destruction, something which has been successfully deployed for example by the UN. An example is provided by the Sherkole camp in the western Highlands in Ethiopia where environmental education and awareness is being put into place to help fight climate change (UNHCR, 2009). The other type of situation to which humanitarian logistics is usually linked is disaster relief operations. Literature suggests that up to 80 percent of the costs involved in relief operations are in fact related to logistics. Not only are the costs of the disaster relief operations high, the impact on the environment is also severe as in many cases the urgency of the situation enforces the use of environmentally unsound transportation modes and means. Thereby, one aspect of the potential conflict between efficiency in humanitarian logistics and environmentally sound green supply chains is in the selection of modes of transportation for material delivery. If delivery time is a major concern then air transport may be

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