

# Chapter 13

## Sustainability in Supply Chain Management

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### ABSTRACT

*This chapter introduces sustainable development and its influences on supply chain management context. Sustainable development brings economical, environmental, and social concerns into managerial issues in supply chain. So working in sustainable environment will be more complex for managers who are now responsible to consider business functions from the three dimensions of sustainable developments. In this paradigm, managers seek the ways to avoid negative environmental and social impact of their operations and at the same time earn economical benefits. Furthermore, sustainability forces managers to deal with different stakeholders included in three dimensions of sustainable development. To proceed in this way, this chapter first presents environmental and social considerations and relevant stakeholders in supply chain management and offer some changes to manage the multi-dimensional and multi-stakeholder nature of the sustainable supply chain. Then, it discusses about the sustainability assessment frameworks to evaluate sustainability of a company as well as a supply chain.*

### 1. INTRODUCTION

Sustainable development was articulated by the Brundtland Commission as development that “meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED,1987). Sustainable development must consider economic, environmental and social considerations, simultaneously.

Based on the (Elkington, 1997), these categories are referred to as the Triple Bottom Line of the 21st century. In fact, moving toward sustainable development needs to meet the objectives in three mentioned areas in such a way that:

- Maintain a high and stable level of economical growth and employment
- Effective protection of the environment

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- Provide social progress which recognizes the needs of every one

With respect to growing importance of sustainability, exploring the relationship between supply chains and sustainability seems to be necessary. This is due to the fact that supply chains consider the product from initial processing of raw materials to delivery to the customer (Linton et al, 2007) and also management of end-of-life (EOL) product. So concentrating on supply chain with sustainability concerns can lead us to improve sustainability through entire product life cycle.

Nowadays, a quick look at the surroundings shows us that environmental threats have been considered as a serious problem by governments and society. Companies have been pressed to diminish the negative environmental impact of their product and processes by the consumers and governments (Quariguasi et al., 2008). Veleva and Ellenbecker (2001) have exemplified companies such as 3M, Shell, Amoco and Interface, that have begun to use environmental, health and safety (EHS), and social indicators. Today, taking back of the products at the end of their life cycle is the responsibility of the producers that have been legally and financially obliged. For example European Community Directives on landfill states that whole tires must be banned from landfill by no later than 2003 and shredded tires no later than 2006. There is similar directive on End of Life Vehicles (ELV).

The important issue is that the three dimensions of sustainability are almost conflicting. For example dealing with EOL products needs incur more costs rather than resultant benefits. At the same time waste treatment will be advantageous for the society (Dehghanian and Mansour, 2009). Traditionally, cost has been the most important factor in supply chain management decisions. Recently, with the growing importance of sustainability, environmental and social impact, are going to play key roles in this area (Dehghanian and Mansour, 2008). Also, different stakeholders

can be included in three dimensions of sustainable development. This can make the supply chain management more complex than before.

In the following sections, first based on the literature survey, sustainability considerations have been categorized and guidelines for sustainability improvement have been presented in each category. Then different stakeholders in supply chain management in sustainable development context have been presented as the players than can affect an organization and a supply chain as a whole. Additionally, sustainability assessment indicators and frameworks have been introduced and a framework for supply chain sustainability assessment has been proposed. In the sections some references have been suggested for more read on the subjects.

## **2. LITERATURE REVIEW**

Literature about supply chain management in sustainable development context can be categorized in two parts:

- Environmental principles applicable to supply chain management
- Scenario analysis of potential applicable changes

The next two sections describe the base literature in these mentioned categories.

### **2.1. Environmental Principles Applicable to Supply Chain Management**

The majority of supply chain management literature in sustainable context is related to applying environmental principles. Managers have been paying more attention to the environmental impacts of their operations. Since the early 1990s, literature about environmental considerations has been usually focused on the firm level. Green

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