

Chapter 18

Green Logistics: Global Practices and their Implementation in Emerging Markets

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ABSTRACT

Global warming, climatic disasters like Hurricane Katrina, and the depletion of the ozone layer illustrate the negative impact of economic growth on ecological systems and the societies that function within them. As a result, customers and many governments around the world are developing a more conscious and respectful attitude toward the environment, propelling environmental concerns to the forefront of many companies' competitive strategies.

Consequently, the implementation of green practices into logistics systems is gaining worldwide importance. Green logistics practices within companies, once considered proactive measures (Wu & Dunn 1995), now influence entire value chains, and their presence has become a requirement for doing business. What are the current global practices of choice, and what challenges do companies face in applying them in emerging market economies?

This chapter presents a global overview of green logistics practices at various management levels and the inherent challenges of their implementation in emerging markets. It begins by clarifying the terminology and describing its scope and characteristics, and it continues with an analysis of the impact of green logistics on the creation of economic and social value.

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INTRODUCTION: BASICS OF GREEN LOGISTICS

The negative impact of business activities on the ecosystem (e.g. global warming and climatic disasters) gave rise to the formulation of various approaches for achieving sustainable methods of development. The Brundtland Commission defined sustainable development as “a type of development that satisfies the current needs without reducing the availability and quality of resources to allow future generations of people to satisfy their needs (WCED 1987)”. In broad terms, the goal of sustainable development is to address growing concerns about environmental issues while simultaneously responding to socio-economic imperatives.

Companies around the world are feeling pressure to implement green practices into their value-creation systems. This pressure emanates from growing environmental awareness on the part of consumers in many countries, as well as increasing prices for raw materials and energy, environmental legislation, and influence exerted by dominant actors in the value chain (Fleischmann et al. 1997, Carter & Ellram 1998, Stock 2001, Ferguson & Browne 2001, Voigt & Thiell 2004, Kumar & Malegeant 2006, Seuring & Müller 2008).

The solutions that have been proposed and applied to respond to these trends cover entire value chains, from the reduction of raw material consumption and industrial contamination to cutting down on solid domestic residuals at the end-of-life of products and their reintegration into new value creating processes. Logistics activities encompass these processes due to the cross-functional and cross-organizational nature of logistics management (Wu & Dunn 1995).

There is widespread acknowledgement that logistics significantly affect the environment, producing the desired service on one hand and an unavoidable negative environmental impact on the other. For example, transportation is a

logistics operation that has substantial impact on the environment. CO₂ emissions from vehicles, aircraft and vessels generate atmospheric contamination, often considered one of the main causes of the global warming effect threatening the world today (Berntsen & Fuglestedt 2008). Thus, green logistics becomes a key component in achieving sustainable management.

Green Logistics: Drivers, Definition, Characteristics and Scope

Green logistics consists of all activities related to the eco-efficient management of the forward and reverse flows of products and information between the point of origin and the point of consumption whose purpose is to meet or exceed customer demand. Given this definition, green logistics is not “new” in terms of re-inventing logistics, but it stresses the integration of ecological goals into the target systems of organizations and value chains in order to provide a balanced set of total value to customers (Carter & Rogers 2008).

Green logistics is a concept put forward in the mid-80s (Beaman 1999) to characterize logistics systems that employ advanced technology and equipment to minimize environmental damage during operations, while increasing the utilization of resources within the systems (Rogers & Tibben-Lembke 1998, Yanbo & Songxian 2008). Transferring these general characteristics into activities, the scope of green logistics encompasses the following activity groups:

- **Transportation, e.g.:** clean vehicles, reuse of pallets and containers, freight consolidation and load optimization, standardization of trucks’ sizes, reduction of CO₂ emissions, and sustainable carrier selection.
- **Warehousing, e.g.:** clean material handling equipment, reconditioning and reuse of pallets and containers, process optimization, automation of warehousing systems, minimization of inventories, facility

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