

A REVIEW OF GREEN LOGISTICS SCHEMES USED IN CITIES AROUND THE WORLD

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Freight carriers strive to provide levels of transportation service with lower costs. However, the economic and environmental viability of cities are negatively affected by the present organization of urban goods distribution. Can these two competitive goals be harmonized to create efficient and environmental friendly urban logistics systems?

Most large cities are confronted with problems regarding air and noise pollution and congestion caused by motorized road traffic. The evolution of urban logistics in the past decades even worsened that situation, due to an increasing use of heavier goods vehicles in city centres. Concurrently, the economic and environmental viability of cities are being negatively affected by the present organization of urban goods distribution. The substantial contribution of large trucks to air pollution by emitting NO_x , Particulate Matter (PM) and other gaseous or airborne pollutants has become an important issue.

Furthermore, non harmonious growth in all modes of transport is one of the main reasons for the existing situation (congestion, environmental impacts, accidents etc).

One of the big challenges facing us at present is creating a long-term sustainable society with the least possible negative environmental impact. In response to this pressure, a new approach to logistics arranged in the early 1990s, which went beyond the standard logistical imperatives for efficient, effective, and fast handling and involvement of goods, and took into account measures for protecting the earth's environment: the "green logistics" approach.

The growing importance of environmentalism is suggested to have two major impacts on logistics management: a broadening of the scope of logistics and an influence on the way logistics managers do their jobs. The logistics discipline has generally focused on producer-to-consumer movement of products, considering transportation, warehousing and inventory management (forward distribution). But the desire for "greenness", led in the early 1990s to the concept of "reverse" distribution.

Painting logistics "green" is not easy, however. Rodrigue et al. (2001) state that there are basic inconsistencies between "greenness" and "logistics". The cost-saving strategies followed by logistic operators are often at variance with the environment, since they usually externalize the

environmental costs. Furthermore, logistical activities do not usually pay the full costs of using the infrastructures. As a result, logistical operators use the most polluting, least energy efficient and most infrastructure-intensive transportation modes to increase the speed of distribution. Globalization and global logistics are harming the environment unevenly because firms are required to maintain high environmental standards in developed countries but can lower these in less developed.

Environmental impacts of logistical activities are most severe where population densities are highest; i.e. in cities. Therefore, city logistics deserve special attention. Taniguchi et al (2003) set three basic pillars as the guiding principles for green city logistics: mobility, sustainability and livability.

Sustainability	Mobility	Livability
Global competitiveness		
Efficiency		
Environmental friendliness		
Congestion alleviation		
Security		
Safety		
Energy conservation		
Labor force		

Figure 1- Structure of visions for city logistics (Taniguchi et al, 2003)

These pillars should support and enhance the goals and objectives of logistics, such as efficiency, congestion alleviation, energy conservation etc. The harmonization of efficiency, environmental friendliness and energy conservation is vital for ensuring sustainable development of freight transport in urban areas.

Consequently, the goal of city logistics should be to deliver and collect the goods for activities produced in a city in an efficient way, without disrupting the sustainable, mobile, livable and environmental friendly character of the city.

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