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## **Sustainable purchasing and transportation in a global supply chain scenario**

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Abstract: Purchasing and transportation are two interrelated business functions, which are increasingly important for supply chain design decisions. In practice, material purchasing decisions are strongly affected by material handling equipment, transportation path flows, modes of transportation, vehicle routing, vehicle capacities and related technical constraints. Within a global sourcing context, companies experience that the cost of transportation is a significant part of total purchasing cost. More recently, sustainability and environmental impact assessment have become key requirements for materials purchasing and transportation decisions. Global warming is a rising concern both in academia and industrial researches, and now it is well known that the freight transport industry is responsible for large amounts of carbon emissions contributing to global warming. Thus, it is firstly important to fully analyze and compare the environmental economic policies established by the International Governments (Europe, USA for instance, but also India and China) in order to understand if there is a need for standardized way to force towards low carbon transportation and sustainable purchasing practice or a heterogeneous set of different actions. Then, we will discuss different kind of research issues that are currently emerging in the international research community by presenting some relevant approaches applied to reduce the carbon footprint in goods and raw material purchasing and transportation. We will further discuss the haulage sharing method (horizontal cooperation) and the multi-objective optimization approach for sustainability of freight transportation. Most of the results presented here are part of REINVEST research project, which is financed by the European Union Europe-Aid funding scheme.

Keywords: Sustainability, Low carbon supply chain, Haulage Sharing, Horizontal Cooperation, Transportation

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