

Supply Chain Energy Efficiency

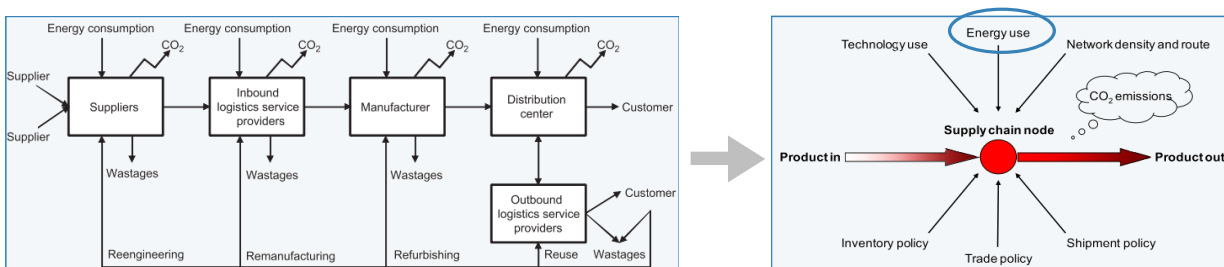
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The topic of the research concerns the joint management of the supply chain in order to reach greater energy and environmental performances.

Energy efficiency is recognized as a pressing need for companies: investments in this area could lead to great savings. Main aim of the research is to look at the energy efficiency topic considering the role and potentials of different supply chain members in a manufacturing context (considering production, storage and transportation).

The manufacturing industry is one of the greatest energy consumers and carbon emitters in the world: it is responsible for about 28% of the primary energy use and for 38% of the CO₂ emissions globally. Thus, energy and eco-efficiency has emerged as one of the most significant manufacturing decision attributes. Additionally, energy is an increasingly important cost factor due to its increasing price. Manufacturing enterprises have to reduce energy consumption for both cost saving and environmental friendliness. The International Energy Agency analysis shows that substantial opportunities to improve industrial energy efficiency exist. Much of this potential can be captured through policies for promoting use and optimization of energy-efficient industrial equipment and systems, and improving overall efficiency through energy management. However, capital funding is almost always limited, and management biases tend to favor core processes over ancillary functions, including energy. Even if facility staffs are fully aware of energy improvement opportunities, they may lack sufficient time and appropriate labor to implement and maintain efficiency measures. Given incomplete knowledge of the benefits of energy efficiency, the easiest decision with respect to implementation is to “do nothing”.

As global markets became more competitive, supply chain coordination became a key component for enhancing its profitability and responsiveness. In recent years, the higher competitive global environment requires a higher cooperation between the different actors in the supply chain. So the coordinating decisions are no longer only about operations (such as order and production lot sizing, number of shipments, etc.), but also about the sharing of financial resources, investments and environmental sustainability.



Mapping the energy flows of the entire supply chain leads to identify the activities that generates energy's inefficiencies and wastes, in order to prioritize specific areas for efficiency improvement and, thus, it is possible to support the different firms in the decision making of which activities to implement in order to reach higher level of performance and of efficiency in the generation of cost savings, throughout feasibility analyses.