

Chapter 15

Logistic Strategies to Minimize Losses and Waste in Food Supply Chains

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ABSTRACT

This chapter proposes sustainable supply chains in agrifoods, achieved through logistical strategies to minimize food waste and losses. Proposals will recover organic and inorganic waste and reincorporate it into the supply chain or add it to new chains through new products generated from food waste. A literature review is presented regarding the causes of food losses and waste within the supply chain and the strategic opportunities in the logistical process to reduce such losses. The creation of models that include the three dimensions of sustainability in food logistics is required in order to achieve a reduction in waste and food losses in transport, as well as to minimize costs and environmental impacts. If a correct sustainable logistics is carried out, it would favor the reincorporation of waste into new supply chains.

INTRODUCTION

The relationship between supply chain strategies, food production and the environment derive from their interactions. Climate change, challenges in agriculture need to be addressed, national-level policy drivers and innovation in agricultural processes are required, which are fundamental to fostering sustainable development, an enabling environment for innovation and a sustainable bioeconomy, through the use of clean technologies. (Sarkar, Poon, Lepage, Bilecki and Girard, 2018). Sustainability in agrifood

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supply chains should be promoted; decisions should be analysed in the competitive environment in which companies operate with regard to the location of their raw material production centres, materials, technologies available to their suppliers, leverage over upstream suppliers and end markets. (Rueda, Garrett, and Lambin, 2016).

Technological changes in the agrifood industry have influenced economic and social development. These changes have also led to new environmental problems, such as those related to the large-scale use and disposal of auxiliary materials. The application of industrial ecology analyzes the potential development of approaches based on a representative context. Efficient solutions can be implemented through material substitution, repair, recycling and exploitation of collaborative strategies between the agro-food and industrial sectors (Simboli, Taddeo, & Morgante, 2015).

The green issue does not figure in the sales and profit objectives of some companies, because they do not have defined strategies for market changes regarding ecology and sustainability, the establishment of a strategic planning model that contemplates objectives and strategies on the environment, is for companies to adopt sustainable proposals and ensure their permanence in the market (Ávila, 2014). The ecological and social circumstances in which food is produced and offered, how the practices of a sustainable supply chain that allow the company to dominate maintain control over its supply chain and achieve a competitive advantage in the implementation of dynamic capabilities (Beske, Land, & Seuring, 2013).

In the case of agrifoods, the application of agroecological principles is sought, that is, the generation of food through environmentally friendly practices, to ensure the sustainability of products. In this commercial sector, producers want to integrate ecological processes and biological controls into the production, as well as make use of available resources at low cost and with less environmental degradation (Dafermos & Vivero, 2015). Towards sustainable agriculture, in Argentina the farmers of this community were able to increase their profits throughout their production chain and in profits, while restoring the ecological balance in their fields, to incursion into ecological practices. Producers can achieve these benefits through the implementation of sustainable strategies, sustainable marketing and the consumer's perception of being socially responsible producers with the environment (Gutiérrez & Suarez, 2014).

Sustainability in agro-industrial supply chains is an issue of great interest to various public and private sectors, due to the progressive deterioration of the environment, one of the great challenges is the design of the supply chain, due to the complexity it represents, many academics choose to take the study of one or parts of the supply chain (Allaoui, Choudhary, & Blormhof, 2016). The first step towards a more sustainable solution to the food waste problem is to adopt sustainable production (Papargyropoulou, Lozano, Steinberger, Wright, Ujang, 2014).

The agrifood supply chain, unlike other chains, implies indicators of food quality, safety, seasonality and a very limited useful life of the products (Alvarenga, Mourinha, Farto, Santos, Palma, Sengo, ... Cunha-Queda, 2015). Currently the agricultural sector is under double pressure, first to be sustainable, i.e. to be able to satisfy the needs of the present without compromising the supply capacity of future generations and secondly to provide food, energy and industrial resources to satisfy the needs of the international community. The agricultural market is volatile and extremely sensitive to economic fluctuations (Borodin, Bourtembourg, Hnaïen, & Labadie, 2016). Consumers increasingly demand organic and sustainable food, due to this trend the agri-food supply chain considers not only the cultivation of food, but also its distribution from the field to the customer's table, processing, packaging, storage, handling of by-products and waste (Gutierrez & Suarez, 2014).

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