

# Special Issue: Agrifood and biomass supply chains

## Editorial

Special Issue Guest Editors:

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This Special issue deals with two types of supply chains, the agrifood supply chain ('farm-to-fork') and the biomass supply chain ('farm-to-energy'), both originating on the farm and directed towards different end-usages. Regardless of the different end-usages, both chains involve inherent high complexity due to the interactions between the consisting entities, many of which are characterized by significant dynamism. The sources of the complexity and dynamism are mainly attributed to the beginning and end of these chains. On one hand, the unpredictable environment of the demand (both in food market and energy market) is affected by social, political, and economic drivers, and on the other hand, the supply is affected by the uncertain bio-production environment (weather dependency, short workability windows, limited and disperse crop availability, etc.). On top of that, growing environmental, social, and ethical concerns put pressures on employing sustainable practices in the supply chains, as a measure to reduce the impacts of the bio-production sector. Although that advances in engineering technologies and information and communication technologies have been introduced into the supply chain processes, there is still much inefficiency in the decision making and management of the agrifood and biomass supply chains, making it difficult to fulfill the aforementioned requirements.

The collection of papers presented in the Special Issue covers key topics centred on the design and management

of these chains, such as, greening of supply chains, provision of organic farming products, integrating product design and supply chain, energy balances etc., and involving approaches ranging from pure engineering methodologies to soft system methodologies. Specifically, five papers deal with the agrifood supply chain, and four papers deal with the biomass supply chain.

In the area of agrifood supply chain, paper #1 (*Design of sustainable supply chains for the agrifood sector: A holistic research framework*) presents a methodological conceptual framework on designing green supply chains with the objectives of minimizing environmental impact and maximizing supply chain sustainability. In paper #2 (*Consumer driven supply chains: the case of Dutch organic tomato*) the drivers (environmental friendliness and naturalness, among others) for organic farming produce are examined in the value chain of the product based on a quantitative survey. Paper #3 (*A paradigm shift for a successful launch of a locally-based start-up in the food supply chain*), having as a focal point the SMEs (small medium enterprises), presents the design of a user-friendly framework for starting-up business in the local food supply chain. Paper #4 (*Identifying the optimal strategy for suppliers' involvement in product design: a case study*) employs a multiple-criteria analysis for determining how the features of the supply chain can be integrated in the design of a new product. Paper #9 (*Intermodal vs. conventional logistic of refrigerated products: a case study from Southern to Northern Europe*) compares the intermodal and conventional logistics and

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analyzes essential readjustments required in order to increase efficiency in the supply chain of refrigerated fruit and vegetables.

In the area of biomass supply chain, paper #5 (*Energy Demand in Agricultural Biomass Production in Parana state, Brazil*) implements various performance indicators for evaluating the energy demands of several biomass production systems for energy production use and the process efficiency, as well. Paper #6 (*Energy Demand in Sugarcane Residue Collection and Transportation*) aims at determining the material and energy flows for sugarcane trash collection and transportation and identifying the critical steps of the chain. Paper #7 (*Influencing factors on agricultural transports and their effect on energy consumption and average speed*)

concentrates on the inter-link between agriculture and logistics, providing an overview on the possibilities to reduce costs in the agricultural transport sector through optimizing the type and size of the transportation means. Finally, paper #8 (*The use of multivariate approaches in biomass energy plantation harvesting: logistics advantages*) demonstrates the use of multivariate model approaches for modeling complex supply chain systems.

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