



THEMATIC SESSION: TS07

Title: Application of stochastic programming and robust optimization in supply chain planning

Conference associated Topic: Supply Chain Management under Risk and Uncertainty

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Abstract: Supply chains are prone to various sources of external and internal perturbations such as uncertain demand, supply of materials, price fluctuations, and equipment failure. This calls for robust decision support tools such that the strategic, tactical, and operational decisions are protected against uncertainties. Stochastic and robust optimization have been known as two of the most promising approaches to deal with uncertain parameters in mathematical programming models, similar to the ones exploited for supply chain design and planning. While the former approach requires the probability distribution of random factors, the latter relies on a convex uncertainty set without the need for exact probability distribution. The proposed session will non-exclusively focus on the application of stochastic and robust optimization methods in:

- 1- Design of value chains under uncertainty in manufacturing and natural resources sectors such as automobile, electronics, forest, and oil & gas industries.
- 2- Evaluation of the technical and economic potential of integrating bioenergy, and identification of robust transformation strategies for pulp and paper industry.
- 3- Biomass supply chain design and planning.
- 4- Sales & Operations planning in manufacturing and natural resources sectors.
- 5- Design and planning of third-party maintenance logistics networks in the context of repair & overhaul industries.

Keywords: *Supply chains, uncertainty, stochastic programming, robust optimization*

