



Research School for Operations
Management and Logistics

Quantitative evaluation of the valorization potential of available feedstocks at supply chain level

Emmanuel Anom – Wageningen University & Research

The valorization of biomass waste streams in current production systems is an opportunity to enhance supply chain sustainability and eliminate current inefficiencies. Stakeholders need decision frameworks that quantitatively delineate multiple interactions involving sustainability elements to reduce uncertainties in circularizing associated chains. However, the rationale for the final selection of optimal valorized products and the resultant development of an alternative value chain by industry is not clear. Comprehensive decision support tools to evaluate the options of valorized products and associated value chains from sustainability driven metrics are required. The objective of the project is to quantitatively evaluate the valorization potential of available feedstocks at supply chain level. In this project, we investigate methods and models for addressing the complexity, their application and propose a different logistic concept to design and evaluate. Three biomass case studies (leftover potatoes, coffee grounds and micro-algae.) are chosen to represent the 3 different types of biomass and are applied to validate the information in the real sector. Decision support models are developed to optimize product flows and important location-allocation decisions. The models are applied to eliminate current inefficiencies and optimize the structure of representative case studies.