Two-Stage Stochastic Optimization Of A Biofuel Supply Chain – A Korean Case Study

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Concerns about climate change, energy security, and the diminishing supply of fossil fuels are causing our society to search for new renewable sources of transportation fuels. Amongst various candidate, biomass have attracted much attention in recent years because of its widespread availability and its potential applicability as a sustainable source of energy and material. The biomass passes through some facilities and undergoes various processes called the biomass supply chain.
There are many parameters that have uncertainty characteristics. According to review papers the most important variables have to deal with are: biomass supply, biofuel demand. In this study, based on our parameter and specific biomass that can be found easily in eastern Asia called "Saccharina japonica", a two-stage mixed integer programming of a biomass-based fuel supply network is developed to deal with two main important uncertainties. The proposed model is then validated via a real-world case study with data from Korea. The aim of this work is to determine planning decisions related to a supply chain that can be dispersed in Korea's geographical area.