

STOCHASTIC OPTIMIZATION OF BIOFUEL SUPPLY CHAIN OPTIMIZATION:
APPLICATION IN SOUTH KOREA

Zarei Mohammadamin, 유준^{1,†}, 이경범
부경대학교; ¹Pukyong National University
(jayliu@pknu.ac.kr[†])

Concerns about climate change and energy security are causing our society to search for new and renewable sources of transportation fuels. Amongst candidate, biomass has attracted much attention. The flow of biomass from the harvesting site to its end use for producing biofuel is called the biofuel supply chains. Each part of the supply chain needs specific knowledge, technology including harvesting, transporting, storing, converting, and distributing. Most researchers have deterministic assumption for parameters. However, in a real case study, uncertainty play a significant role. Thus, designers of a supply chain must understand the dynamics of parameters of the supply chain which represent uncertainties.

The most important uncertain parameters are biomass supply (biomass yield, harvest rate and biomass quality) and biofuel demand. In this study, based specific biomass called “*Saccharina japonica*”, a multi-stage stochastic mixed integer linear programming of a biofuel supply network is developed to deal with those main important uncertainties. The performance of the proposed model is demonstrated through South Korea.