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Abstrak

The onset of climate change has resulted in the development of strategies which try to mitigate the excessive generation of carbon dioxide (CO2). The trasnport sector for example, which contributes more than 10% of the global CO2 emmision, is promoting the use of biofuels in order to improve a nation's energy security and to reduce the sector's carbon footprint. Biofuels which are sourced from agricultural feedstocks will require more water resources than their fossil fuel counterparts and with climate change affecting rainfall patterns, it is expected that water resources will become more scarce. A fuzzy multi-objjective mathematical model for optimizing the biofuel supply chain in consideration of multiple regions is developed in this paper. The model seeks to identify how resources should be allocated in the presence of regional water constraints to satisfy the growing demand for biofuels. A case study on bioethanol produced from different indigenous feedstocks in three Asian countries is presented to demonstratee the capabilities of the model.