



China's biofuel policy in agriculture sector: The impacts on land use change and land management

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The impacts of biofuel on land use change (LUC) and agricultural market in China are mainly driven by climate change mitigation and continuously high demand for vehicle energy. Although government has already realized the profound effects of biofuel, its share in total primary energy consumption based on the 13th Five-Year Plan (2016-2020) is only 15% of that in the U.S. renewable fuel standards (RFS2). This is mainly because of China's domestic irrational energy structure and uncertainty impacts of biofuel promotion. We investigated the impacts of biofuel policies on LUC, price levels of agricultural commodities and limited resources in China under 4 climate change pathways during the period of 2015-2065. The model used here is Forest and Agricultural Sector Optimization Model (FASOM), a bottom-up, recursive dynamic partial model based on the optimal results of land management. The results show that more ambitious biofuel policy would substantially increase the portion of arable land for high biomass production. Meanwhile, we found that owing to the limited arable land, the RFS2 mandates cannot be accomplished in China based on its current biomass pathways and conversion technologies. In addition, the results provide farmers with a detailed scientific strategy to combat climate change and act in accordance with domestic demands, including the choice of location, classification and amount of different crops.