

35. Small farming food versus ethanol sugarcane: global constraints and local opportunities for irrigation in Ghana

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To assess the consequences of sugarcane ethanol introduction in Ghana, we compare the profitability and redistribution consequences of mechanized sugarcane and labour-intensive rice. Yield from crop modelling, data on Louisiana mechanized sugarcane cultivation cost, ethanol transformation in Brazil and rice cultivation in Ghana are used to determine economic profitability. In addition to the comparison of sugarcane and rice with current economic conditions, we use projections of future prices to assess long-term profitability, using the Nexus Land-Use global land-use model and the general equilibrium model Imaclim-R. An in-depth sensitivity analysis both on current and future conditions set bounds on profitability.

Assuming irrigation costs typical of Ghana or interest rate higher than 10% would prevent irrigated production from being more profitable than rainfed agriculture. Accounting for future food or fuel price increases, however, favours irrigation. Ultimately, if the interest rates used are sufficiently low and irrigation costs are lower than average costs of past projects in Ghana, the social profitability of irrigation investment rests on future price projections. Irrigation therefore still appears to be a possible option.

With our estimation of social prices, ethanol or sugar production appears to be less profitable than rice production. Uncertainties on prices and irrigation costs, however, prevent from drawing definitive conclusions. With sufficiently high ethanol prices (e.g. 2011 prices in Europe, or 2011 Brazil export prices), ethanol could remain more profitable than rice, though an even more risky option.