Tropentag, September 18-21, 2016, Vienna, Austria

"Solidarity in a competing world — fair use of resources"

Organic Agriculture in Bhutan - A Two-Edged Sword? The Trade-Off Between Environmental Sustainability and Rice Self-Sufficiency

Arndt Feuerbacher, Ole Boysen, Harald Grethe

Humboldt-Universität zu Berlin, International Agricultural Trade and Development, Germany

Abstract

Bhutan pursues an ambitious agricultural policy: by 2020 it intends to become the first nation to have fully converted to organic farming. Due to its benefits for environmental sustainability, organic agriculture is well aligned with Bhutan's philosophy of gross national happiness. In Bhutan, the cultivation of most crops is considered "organic by default", which does not hold for paddy cultivation. A recent field study in Bhutan has found that conversion to organic agriculture would increase the labour requirement for paddy production by 11 %, as agrochemicals have to be substituted by manual weeding and application of farmyard manure. Since paddy production is already highly labour intensive in Bhutan, a nationwide conversion to organic agriculture is likely to decrease farmers' competitiveness reducing the self-sufficiency in rice. Food self-sufficiency is, however, another priority of Bhutan's agricultural policy. The objective of this paper is to assess the trade-off between food self-sufficiency and achieving environmental sustainability through organic agriculture. As agriculture employs 57 % of Bhutan's labour force and due to the large relevance of rice as the major staple food, an economy-wide model is used to estimate the impacts of the organic agriculture policy. We use a recently developed social-accounting-matrix (SAM) for Bhutan based on 2012 within a single-country computable-general-equilibrium (CGE) model. The 2012 Bhutan SAM has a detailed depiction of the agricultural sector including farm inputs such as farm yard manure, crop residues and draught animal services. Two sets of scenarios are simulated. Within the first set, we simulate scenarios of government interventions that aim to increase food self-sufficiency resulting in varying degrees of self-sufficiency compared to the base. In the second set, we simulate the same government interventions as before, but now under a full conversion to organic agriculture. Comparing scenarios of the first and second set will allow to assess the trade-off between organic agriculture and different levels of self-sufficiency. Expected results are that the conversion to organic agriculture will result in lower self-sufficiency levels. Further, we expect to observe largest impacts in the paddy production sector, because of its relative high share of agrochemical input that needs to be substituted.

Keywords: Bhutan, food self-sufficiency, general equilibrium modelling, organic agriculture, policy analysis

Contact Address: Arndt Feuerbacher, Humboldt-Universität zu Berlin, International Agricultural Trade and Development, Unter den Linden 6, 10099 Berlin, Germany, e-mail: arndt.feuerbacher@hu-berlin.de