

**Title:** Evaluating impacts of changes in energy policies: The case of the bioenergy crop production at farm in Germany

**Background & Objective:**

Over the last years the role of bioenergy crops has increased in Germany. This type of crops is cultivated to produce biofuels or to generate electricity or heat. On the one hand, bioenergy crops contribute to farmers' incomes and benefit to environment, for example by emitting less greenhouse gases than conventional energy resources. On the other hand, energy crops compete with food crops for restricted resources, and hence should be analyzed in the context of overall farm activities and constraints.

In Germany the rapid growth of energy crop production at farm occurred through the government support policies. A change of state supporting policies may accordingly affect the cultivation of bioenergy crops at farm and as a result provision of energy. Hence, the objectives of this study are to: (1) Analyze the current role of energy crop production and state policies supporting energy crop production in farming activities; (2) Investigate the effects on farm activities and income of changed government supporting policies for energy crop production; and (3) Identify policies that would address the multidimensional aspects of bioenergy crop cultivation (e.g., farm income and employment, reduced dependency on state support, conservation of environment).

**Approach:**

To achieve these objectives it is expected to develop a farm level linear programming model. The model should optimize the allocation of resources, while considering conventional (non-energy) crops and energy crops. The objective function of the model is the farm total gross margins, which is maximized subject to constraints, i.e. resource endowments. Several policy scenarios should be run to analyze their effects on farm activities and especially bioenergy crop production. It is expected to collect data from the secondary sources and relevant to: farm production activities, crops yields and prices, input application and their prices, environmental aspects of crops, and information on policies related to the bioenergy crops. The case study should refer to a single crop farm in Germany.

**Contact and supervision:**

Alisa Kostrova ([a.kostrova@ilr.uni-bonn.de](mailto:a.kostrova@ilr.uni-bonn.de)), Dr. Utkur Djanibekov ([u.djanibekov@ilr.uni-bonn.de](mailto:u.djanibekov@ilr.uni-bonn.de)),

### **Background Literature**

BMEL, (2014). Support and Agricultural Social Policy. [http://www.bmel.de/EN/Agriculture/Support-AgriculturalSocialPolicy/Support-AgriculturalSocialPolicy\\_node.html](http://www.bmel.de/EN/Agriculture/Support-AgriculturalSocialPolicy/Support-AgriculturalSocialPolicy_node.html).

Lupp, G., Steinhäuser, R., Starick, A., Geis, M., Bastian, O., Albrecht, J., (2014). Forcing Germany's renewable energy targets by increased energy crop production: A challenge for regulation to secure sustainable land use practices. *Land Use Policy* 36, 296-306.

German Academy of Sciences Leopoldina, (2012). Bioenergy – Chances and Limits.

Peterson, J-E., (2008). Energy production with agricultural biomass: environmental implications and analytical challenges. *European Review of Agricultural Economics* 35 (3), 385-408.

Faaij, A.P.C., (2006). Bio-Energy in Europe: Changing Technology Choices. *Energy Policy*, 34 (3): 322–42. doi:10.1016/j.enpol.2004.03.026.