Tropentag, October 6-8, 2009, Hamburg

"Biophysical and Socio-economic Frame Conditions
for the Sustainable Management
of Natural Resources"

Smallholder Production and Climate Risk in the Baixo Amazonas Region, Brazil

Vanesa Rodriguez[1], Rui Pedroso[1], Hartmut Gaese[1], Jan Börner[2], Christiane Ehringhaus[3]

[1] *Cologne University of Applied Sciences, Institute for Technology and Resources Management in the Tropics and Subtropics, Germany*

[2] *Amazon Initiative Consortium, Brazil*

[3] *Center for International Forestry Research (CIFOR), Forests and Livelihoods Program, Brazil*

Abstract

Climate models consistently predict higher incidence of extreme weather events such as droughts in the Amazon region a warmer and drier climate especially in the Eastern part of the biome. Past Amazon droughts demonstrated the vulnerability of both forests and people to such local impacts of global climate change. This research seeks to **(1)** identify the degree of rural livelihood's exposure to climate risk, **(2)** understand related risk coping strategies, **(3)** elicit representative local producer risk profiles, and (4), develop recommendations for local producers and decision makers to reduce vulnerability to climate an other risks. Representative production systems (PS) in the study area were analysed and classified through randomly sampled semi-structured interviews and official statistics. Following the classification, detailed individual and group interviews with local producers of every PS in the studied communities were conducted and complemented by official information from government institutions and producer cooperatives. Probability distributions of income and output were simulated for each PS using Monte Carlo techniques. As a result, representative producer risk profiles were constructed and subjected to climate change and adaptation scenario analyses. It was found that the major sources of variation in producer welfare and output result from normal and well-known fluctuations in economic and weather related variables. Climate change scenarios, however, significantly increase the share of climate born risk especially for poor and specialised producers. The lack of appropriate risk-sharing institutions and safety nets for rural producers are therefore likely to become a more important policy issue in the decades to come. The analysis of local producer risk profiles and their composition appears as a precondition for well targeted adaptation efforts. Few studies have addressed risk in Amazonian production systems. This study demonstrates that relative resource abundance in Amazonian producer settings is no guarantee for resilience against future climate shocks. This research is embedded in the Small Grant research program of the German Federal Ministry for Economic Cooperation and Development (GTZ): Small-scale producers' adaptation to climate risk in the Brazilian Amazon; Promoting knowledge-to-action trough collaboration in research and technival cooperation.

Keywords: Climate change, production systems, risk analyses

Contact Address: Vanesa Rodriguez, Cologne University of Applied Sciences, Institute for Technology and Resources Management in the Tropics and Subtropics, Betzdorfer Str. 2, 50679 Köln, Germany, e-mail: vanesa.rodriguez@daad-alumni.de