The Impact of Policy, Institutional and Technical Innovations on Smallholder Agriculture in the Eastern Amazon:

Conceptual and Methodological Ideas of an Ongoing Research Project

ZEF
University of Bonn

Bettina Hedden-Dunkhorst, Jan Börner, Arisbe Mendoza-Escalante, Thomas Hurtienne

NAEA
Federal University of Pará

1. The Smallholder Farming System

Smallholder farming in the Eastern Amazon comprises a **semi-commercial**, **fallow-based** system, with **slash and burn** being its most characterising activity. Yet, the impact of external and internal factors on the system leads to gradual changes:

Changes in the Farming System
- shortening of fallow periods
- shift to permanent cultivation
- increasing use of fertilizer, agrochemicals and mechanisation
- increase in cash crop production and livestock husbandry

Selected External and Internal Factors Impacting on Smallholder Farming
- partial access to new technologies and capital markets
- new environmental policies
- input and product price changes
- local tenure systems (division of family land)

Slash and Burn

Permanent cultivation: Tobacco

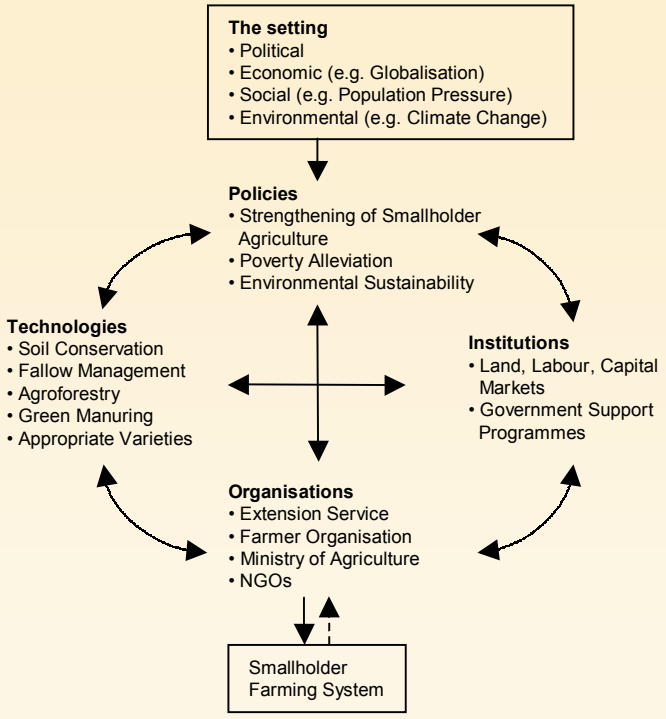

Figure 1: External Factors Affecting Smallholder Farming: A Static Perspective

2. The Effects of Change

Changes in smallholder farming involve **opportunities and risks** for farmers that in a short-run and in a long-run influence smallholder welfare and environmental sustainability. Among others these **risks** include:

- loss in fallow vegetation diversity
- soil degradation where fertilizer applications are insufficient due to farmers' cash constraints
- pests effecting monocultures (e.g. maracuja)
- increasing dependency on variable input, product and factor prices
- increasing indebtedness
- dependency on government support programmes (credit, mechanisation)

Risks and opportunities of new developments suggest that over time different **development pathways** can be anticipated (Figure 2).

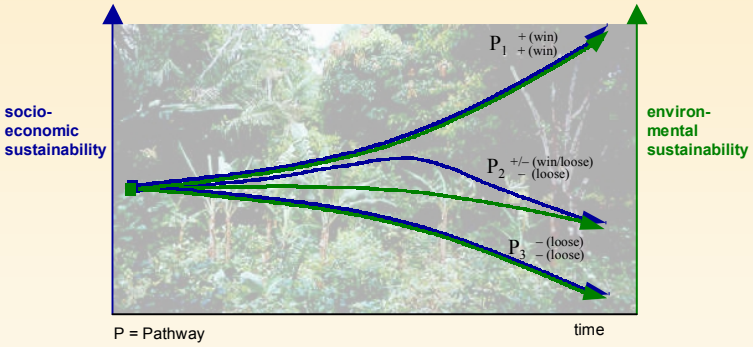

Figure 2: Development Pathways for Smallholder Farmers in the Eastern Amazon: A Dynamic Perspective

3. Analysing Determinants of Change for Policy Support

The project SHIFT[1] ENV 44 "Smallholders in the Amazon: Interactions between Ecosystem and Socio-Economic System in the Use and Protection of Tropical Forests", that is currently carried out by ZEF[2] and NAEA[3] in collaboration with EMBRAPA[4], attempts to:

- simultaneously estimate the impact of policy, technical and institutional innovations on their contribution to achieve alternative development pathways, while maintaining a dynamic perspective;
- provide policy decision support for the introduction of alternative innovations.

The **analytical/methodological approach** applied by the project is outlined in Figure 3.

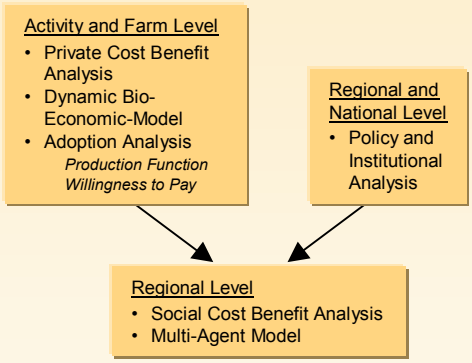

Figure 3: Analytical/Methodological Framework of Research Project

[1] Studies on the Human Impact on Forests and Floodplains in the Tropics
[2] Zentrum für Entwicklungsforschung, Bonn, Germany
[3] Núcleo de Altos Estudos Amazônicos, Belém, Brazil
[4] Empresa Brasileira de Pesquisa Agropecuária, Belém, Brazil

Project funding by the German Ministry of Education and Research (Bmbf) and the Brazilian National Research Council (Cnpq) is gratefully acknowledged.

contact: Bettina Hedden-Dunkhorst (b.h.dunkhorst@uni-bonn.de)