Inclusive Value Chain Development:
Applying Systems Thinking and Participatory Modeling to Dairy Value Chain Analyses in Nicaragua and Tanzania

Inkludierende verdikjedeutvikling:
Bruk av systemtenkning og deltagende modellering i analyse av melkeverdikjeder i Nicaragua og Tanzania

Philosophiae Doctor (PhD) Thesis
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Summary

This thesis explores how policy-makers and other stakeholders can support smallholder participation in higher-value marketing chains despite the many challenges faced by smallholders in developing countries. The overall aim is to provide decision support tools that contribute to improving smallholder livelihoods through inclusive value chain development. This is accomplished by applying systems thinking and modeling to value chain analysis in order to provide deeper context-specific understanding of the complex and dynamic systems present in value chains, and to be able to better test the implications of value chain policies and interventions. Two case studies, the dairy value chain in Mgeta, Tanzania and the dairy value chain in Matiguás, Nicaragua, were chosen for this research because livestock represents a potential pathway out of poverty for many smallholders, while at the same time representing complex and dynamic value chains.

The thesis comprises four separate but interrelated articles that, in different ways, explore, test, and develop the use of systems thinking and participatory modeling in value chain analysis. These articles investigate important aspects of smallholder inclusion in value chain development such as challenges with partnerships, the complexities of value chain governance, the potential of participatory modeling in decision-making, identification of dynamic processes present in smallholder dairy value chains, and the possibilities of testing intended and unintended consequences of different value chain policies and interventions over different time scales. This is accomplished by using mixed methods approaches, constructing causal loop diagrams and stock and flow diagrams, and by applying a participatory modeling approach.

The research illustrates and confirms various opportunities and challenges which smallholders face when participating in or entering into higher-value marketing chains. The thesis concludes that a systems thinking and participatory modeling approach to inclusive value chain development can provide valuable decision-making tools to policy-makers, and to others intervening in value chains. These tools can help in prioritizing which policies and interventions have the potential to strengthen smallholder competitiveness and inclusion in value chains, and can increase smallholder income over time. The thesis provides valuable empirical case-specific findings, as well as important conceptual and methodological developments applicable to a variety of developing country settings.