

Connecting the systems and the user perspective to identify adoption barriers for food security innovations for smallholder farmers – evidence from rural Tanzania-

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Introduction

Innovation is discussed as one possible solution to engage with problems of hunger and food insecurity. However, how successful adoption processes can be managed is still unclear and challenged by many obstacles. This contribution takes an innovation systems perspective that alternates between the micro – and the macro level. This alternation allows for description of the interplay between individual adoption behavior and the broader system conditions.

We developed an analytical framework that combines the different levels: on the individual level we use an innovation decision model and on the macro level we apply an innovation systems framework to describe the system related adoption obstacles. The contribution focusses on to selected innovations: fertilizer micro-dosing (FMD) and improved cooking stoves (ICS) in two case study sites (Morogoro and Dodoma) in rural Tanzania .

Analytical Framework

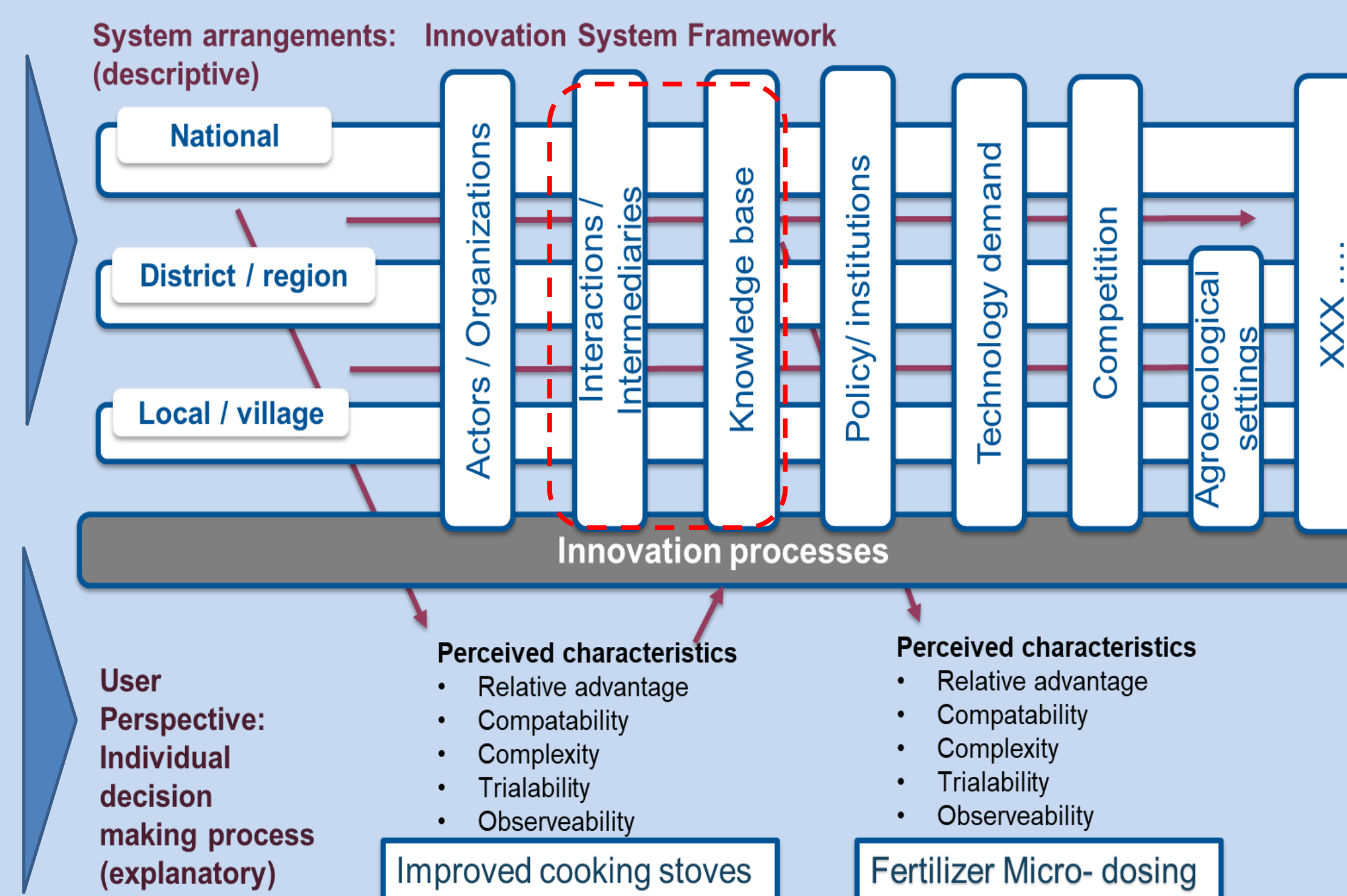
The system Level

To cover the system level and its various aspects an adaptable innovation system framework was developed (Malerba 2002,2004). The framework allows for comparison between system and elements and levels across case studies.

The Individual Level

To understand individual motivation of adoption or rejection an innovation decision model provided a useful analytical tool (Rogers, 2003).

Synopsis of both levels allowed for a better understanding of the innovation processes of the two selected innovations.



Methods

Field Phase I: literature review, expert interviews on different system levels (6 national, 6 district), 3 Farmer group Interviews

Field Phase II: Expert Interviews (9 district level) , Farmer Group Interviews 12 (project internal groups), 3 external (comparative groups), Interviews with new adopters and dropouts (7)

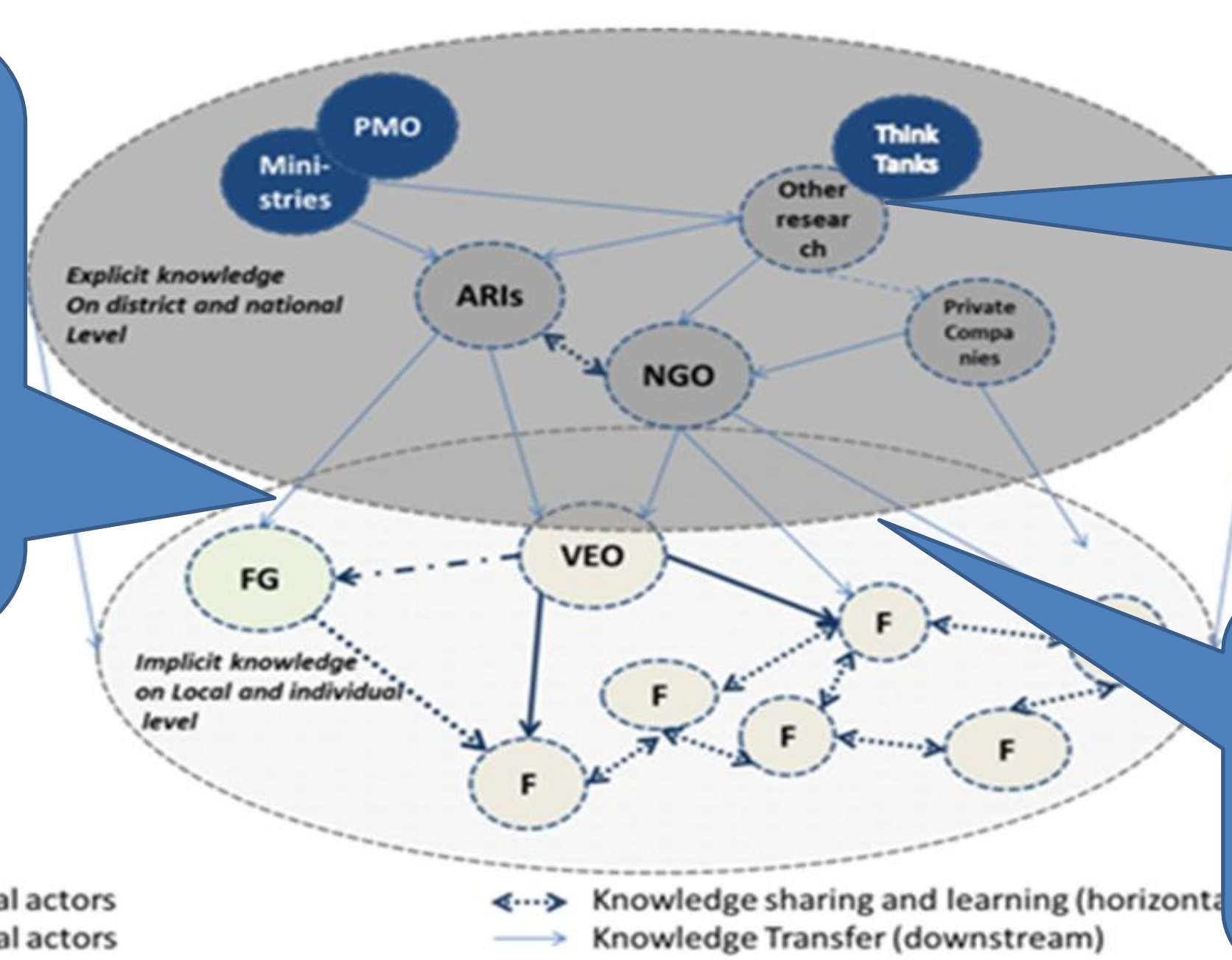


Results



„The kind of knowledge produced is a problem. Because research is controlled externally (by donors)“ (Interview #2, Foran et al. 2014)

„Knowledge flows between the levels are „interrupted“ (Interview #2, 5)



: “...in the workshops and seminars (at the national level), there are no farmers. Farmers are being left by themselves.”
(Interview # 6)

The link between the farmer and the science is missing (Interview # 2) , availability of funding ...] on a local level is only 30% (Interview #2) and therefore farmers perceive government programs as non – sustainable rethorics FG # 1.3)



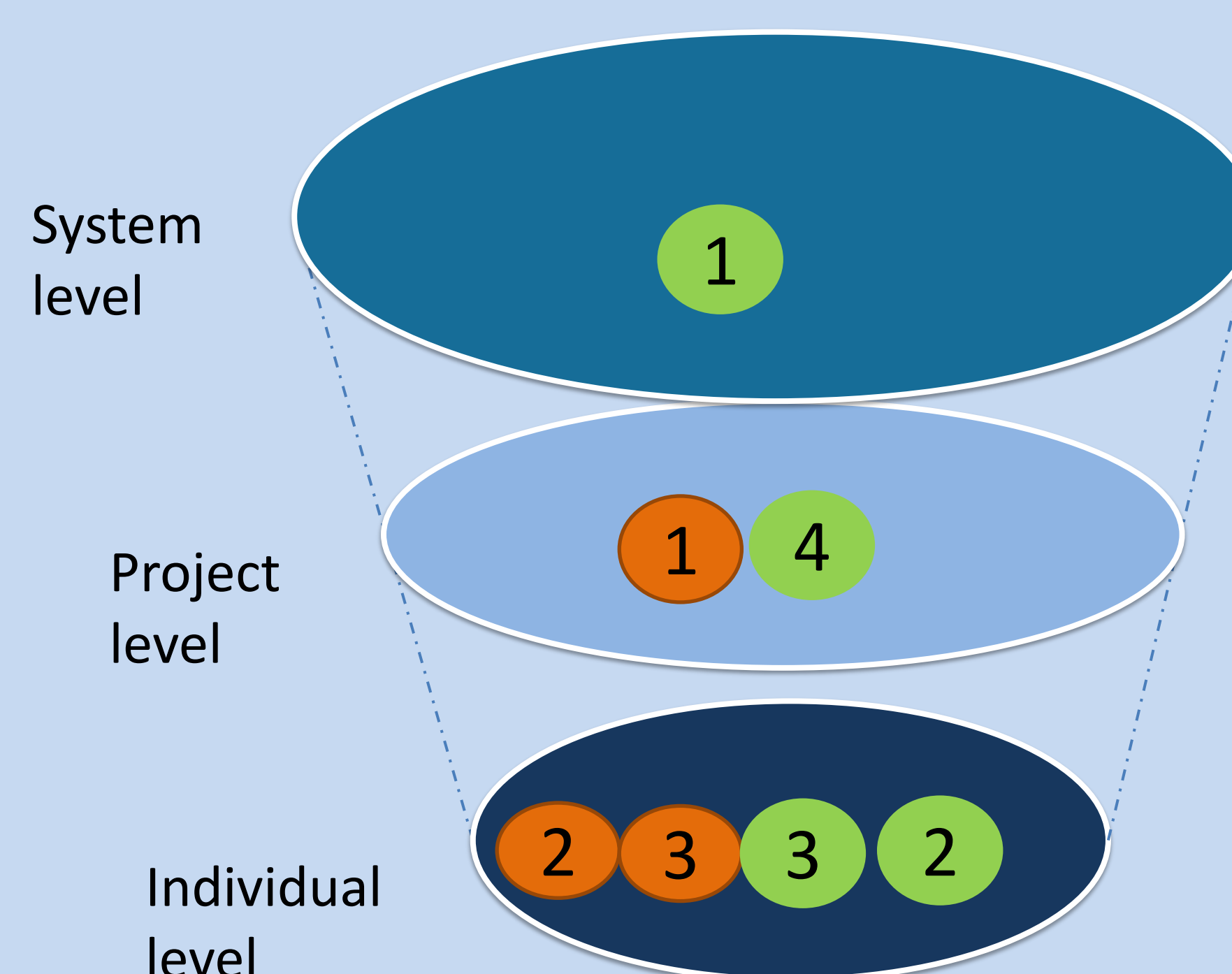
Selected adoption obstacles

Improved cooking stoves

- (1) Internalization of external factors due to project setting (provision of cookstoves...)
- (2) Insufficient consideration of „how-to“ knowledge (at the users`side)
- (3) Perceived relative advantage does not meet the perceived effort related to implementation

Fertilizer Micro-dosing

- (1) Missing coordinated (sector) strategy for on-farm training and capacity building
- (2) High preconditions with regard to specific knowledge of bio-physical processes needed (at users`side)
- (3) Farmers` possibilities for experimentation limited due to missing „how –to“ knowledge
- (4) Post-project provision of and unclear payment for inputs hinders adoption (internalization of external costs)



Conclusions

1. Alternation between micro- and macro level allowed for description of interactive multi-actor nature of ICS and FMD innovation processes.
2. Adoption **barriers are created as interplay** of (a) system environment, (b) innovation design and (c) individual actors' perception .
3. **Implementation levels** need to be discussed.
4. More **system thought** and systemic development and implementation of needed.