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Framework for participatory food security research in rural food value chains



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ABSTRACT

Enhancing food security for poor and vulnerable people requires adapting rural food systems to various driving factors. Food security-related research should apply participatory action research that considers the entire food value chain to ensure sustained success. This article presents a research framework that focusses on determining, prioritising, testing, adapting and disseminating food securing upgrading strategies across the multiple components of rural food value chains. These include natural resources, food production, processing, markets, consumption and waste management. Scientists and policy makers jointly use tools developed for assessing potentials for enhancing regional food security at multiple

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spatial and temporal scales. The research is being conducted in Tanzania as a case study for Sub-Saharan countries and is done in close collaboration with local, regional and national stakeholders, encompassing all activities across all different food sectors.

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1. Introduction

Food insecurity is one of the most pressing challenges, particularly in developing countries. According to WHO (2013), food security is achieved when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life. Food security can also be considered as a function of food availability, food accessibility, food stability and food utilisation (FAO, 2002; Ziervogel and Ericksen, 2010). Different types of processes can impact food security at different and/or multiple spatial levels. These include loss of soil fertility and soil degradation (local, regional), urbanisation (regional, national), land use changes such as replacement of food crop areas with biofuels, industrialisation, population growth, droughts, domestic and foreign government policies, fluctuating market situations (national, global), and climate change (global).

Large-scale impacts are usually tangible down to local scale. Most of these processes are increasing, enhancing the unpredictability and insecurity of regional food supply, especially in Sub-Saharan Africa (AbdulRahim et al., 2008; Foley et al., 2011; Van Rooyen and Sigwele, 1998). The food security status is considered to be the primary outcome of a food system and the basic indicator of how well the food system functions (Ericksen et al., 2009).

The hunger crisis in 2011 and 2012 in the Sahel demonstrated the tremendous climate impact on the whole food system and the lack of effective strategies to secure the food supply (Maxwell and Fitzpatrick, 2012). Both human and ecological framework conditions are changing rapidly (Lotze-Campen et al., 2010; Müller, 2011). This raises an urgent and continuous need for a better integrated food system understanding and for developing region-specific and innovative strategies.

Research and development (R&D) projects so far have usually been top-down oriented and included one or only few disciplines, limiting their success. A number of recent international research and development projects have been focusing inter alia on increasing food security (World Bank, 2012; CGIAR, 2012; WASCAL, 2013; Millennium Villages, 2013) while including more food-related sectors and disciplines in a bottom-up approach. To achieve positive impacts and sustainable solutions, these projects increasingly focus on integrated in-depth analysis of the food system itself and its nexus elements. This encompasses amongst others (a) natural and human resources, (b) the use of production inputs, (c) the safety and quality of food produced, (d) the consumption patterns, and (e) functioning of local and global markets (Foley et al., 2011; Pinstrup-Andersen, 2002). To ensure enduring success, such analyses should include the specific cultural, political, social, ecological and economic environments, a broad participation of local and regional stakeholders, and a focus on local and regional site conditions (Below et al., 2012; Grimble and Wellard, 1997; König et al., 2012; Reed et al., 2009). On the other hand, also political bottlenecks to food value chain (FVC) upgrading have been observed, for instance the persistence of urban bias (Bezemer and Headey, 2008; Demont, 2013; Laroche Dupraz and Postolle, 2013) may jeopardize long-term sustainability of FVC strategies.

The term stakeholder refers to individuals, groups, and organizations that are directly affected by decisions and actions, such as local farmers, or that have the power to influence the outcomes of these decisions, for instance, governments (Freeman, 1984).

The objective of this paper is to contribute to more sustainable impacts of R&D projects in rural food systems. We analysed the

requirements for collaborative food system research in developing countries and developed an integrated framework for research along the entire rural FVC, including action research (Chambers, 1994; Riisgaard et al., 2010). Our framework hence focusses on the rural FVC. Nevertheless, urban and rural food security is strongly interlinked and equally important. Rural food production may strongly depend on consumers and end markets in urban areas (USAID, 2009). And urban consumption zones can have important leverage effects on rural FVCs and raise farmers' livelihoods. Our framework considers both subsistence and surplus farming for local and regional markets. Within an international research project (Trans-SEC: Innovating Strategies to safeguard Food Security using Technology and Knowledge Transfer: A people-centred Approach) this framework is applied with the aim to improve the food situation for the most-vulnerable rural poor population of Tanzania. It is designed to identify successful food securing upgrading strategies and/or innovations along local and regional rural FVCs (Gómez et al., 2011; Riisgaard et al., 2010). Furthermore, it tests and adjusts them to site-specific environments, prepares them for upcoming future challenges, and tailors these strategies to be disseminated and finally implemented for regional and national outreach. In this paper we present this novel FVC research framework.

2. Drivers of rural food systems – Tanzania as a case study

Rural food systems are increasingly impaired by various driving factors. The important drivers affecting these food systems include increasing pressure on the natural production resources land and water and climate change (Boko et al., 2007; Graef et al., 2000; Müller et al., 2011), increasing energy demand (Haberl et al., 2011), population growth, changing trade patterns and economic systems through trade liberalisation and globalisation, and governance factors (Lotze-Campen et al., 2010, Riisgaard et al., 2010, von Braun, 2007). Cause-effect-chains affecting local or regional food security have also influenced food systems over large regions (Ziervogel and Ericksen, 2010). Most of these drivers reduce the productivity of food crops and reduce the land available per capita. Simulations on long- and medium-term global food and energy demands indicate that Sub-Saharan regions are overproportionately affected (Haberl et al., 2011; Müller et al., 2011).

The food supply systems of rural Tanzania are increasingly connected to other biomass production systems such as feed, biofuel and construction wood (Mnenwa and Maliti, 2010). They interact with regionally different biotic and abiotic resources as well as socio-economic and cultural environments (USAID, 2008). Measures to stabilize and develop better food supply are particularly important in Tanzanian regions where the food situation is already insecure, such as in low-rainfall Eastern Tanzania. Agricultural systems of Tanzania usually provide the local communities with sufficient food, also generating income and enabling better education (Below et al., 2012; United Nations, 2007). Nonetheless, improper development of the food production systems and FVCs can reduce and destabilise food supplies and thus increase food prices and price volatility (Foley et al., 2011; Kiratu et al., 2011). Total reliance on local food production and markets is risky because of climate-induced production failures. However, reliance on regional, national or international markets and/or imports is also risky due to price volatility (Seck et al., 2010). Another effect could be the displacement of vulnerable people

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