

Sustainability impact assessment to improve food security of smallholders in Tanzania



Jana Schindler^{a,b,*}, Frieder Graef^a, Hannes Jochen König^a, Devotha Mchau^c, Paul Saidia^d, Stefan Sieber^e

^a Leibniz Centre for Agricultural Landscape Research (ZALF), Institute of Land Use Systems, Eberswalder Straße 84, 15374 Müncheberg, Germany

^b Humboldt Universität zu Berlin, Faculty of Agriculture and Horticulture, Invalidenstr. 42, 10099 Berlin, Germany

^c Agricultural Research Institute (ARI Hombolo/Makutupora), P. O. Box 1676, Dodoma, Tanzania

^d Sokoine University of Agriculture (SUA) Morogoro, Department of Crop Science and Production, P O. Box 3005, Morogoro, Tanzania

^e Leibniz Centre for Agricultural Landscape Research (ZALF), Institute of Socio-Economics, Eberswalder Straße 84, 15374 Müncheberg, Germany

ARTICLE INFO

Article history:

Received 24 September 2015

Received in revised form 21 April 2016

Accepted 22 April 2016

Available online 15 May 2016

Keywords:

Sustainability

Impact assessment

Food security

Smallholder farmers

Agricultural upgrading strategies

Tanzania

ABSTRACT

The objective of this paper was to assess the sustainability impacts of planned agricultural development interventions, so called upgrading strategies (UPS), to enhance food security and to identify what advantages and risks are assessed from the farmer's point of view in regards to social life, the economy and the environment. We developed a participatory methodological procedure that links food security and sustainable development. Farmers in four different case study villages in rural Tanzania chose their priority UPS. For these UPS, they assessed the impacts on locally relevant food security criteria. The positive impacts identified were mainly attributed to increased agricultural production and its related positive impacts such as increased income and improved access to necessary means to diversify the diet. However, several risks of certain UPS were also indicated by farmers, such as increased workload, high maintenance costs, higher competition among farmers, loss of traditional knowledge and social conflicts. We discussed the strong interdependence of socio-economic and environmental criteria to improve food security for small-scale farmers and analysed several trade-offs in regards to UPS choices and food security criteria. We also identified and discussed the advantages and challenges of our methodological approach. In conclusion, the participatory impact assessment on the farmer level allowed a locally specific analysis of the various positive and negative impacts of UPS on social life, the economy and the environment. We emphasize that only a development approach that considers social, economic and environmental challenges simultaneously can enhance food security.

© 2016 Elsevier Inc. All rights reserved.

1. Introduction

Sustainable agricultural development is linked to the improvement of food security and poverty alleviation, especially in developing countries, where 98% of the chronically hungry population lives (WSSD, 2002; FAO, 2013). In Africa, 90% of agricultural production is derived from smallholder farmers, where the average farm size is about one hectare (IAASTD, 2009; IFAD and UNEP, 2013). These smallholder farmers represent the poorest and most hungry population group in developing countries (IAASTD, 2009; Dethier and Effenberger, 2012; IFAD and UNEP, 2013). Several development initiatives focus on enhancing the agricultural production and productivity of smallholder farmers. The possible impacts of these development initiatives need to be assessed before implementation to minimize negative impacts and the

risk for failure as well as to maximize the potential for livelihood improvement. With the help of ex-ante impact assessment, negative side effects may be discovered, which are invisible from the external points of view of development organizations or researchers who are planning development interventions (EIARD, 2003; Millstone et al., 2010). Ex-ante impact assessment has become an important tool to assess the performance of sustainable development as part of the planning process, i.e., before policy or project implementation (Helming et al., 2011). Sustainability impact assessment is the process that aims to direct decision making towards sustainability (Hacking and Guthrie, 2008; Bond and Morrison-Saunders, 2011; Morrison-Saunders et al., 2014). There is a need to develop a methodological approach that links food security and sustainable agricultural development. This is essential to adapt agricultural development interventions to enhance food security to the local context and to steer towards sustainable development (Schindler et al., 2015). In recent years, impact assessment has become an increasingly important aspect of development activities, as agencies, and particularly aid donors, have sought to ensure that funds are well spent (Hulme, 2000). There is a great emphasis on the suitability and sustainability of project interventions, and assessing these qualities requires

* Corresponding author at: Leibniz Centre for Agricultural Landscape Research (ZALF), Institute of Land Use Systems, Eberswalder Straße 84, 15374 Müncheberg, Germany.

E-mail addresses: jana.schindler@zalf.de (J. Schindler), graef@zalf.de (F. Graef), hkoenig@zalf.de (H.J. König), dvtmchau@yahoo.com (D. Mchau), saidiapaul@gmail.com (P. Saidia), stefan.sieber@zalf.de (S. Sieber).

appropriate methods. As highlighted by [Mayoux and Chambers \(2005\)](#), the new impact assessment agenda for pro-poor development and improving practice necessarily require participation by poor women and men in deciding priorities and identifying upgrading strategies (UPS).¹ [Schindler et al. \(2015\)](#) and [Becker et al. \(2003\)](#) highlight that the active involvement of different stakeholder groups throughout the assessment process and the possibility of learning and exchange are fundamental to impact assessment towards sustainability. Participatory methods are powerful and are indeed essential for identifying the most relevant local indicators to be measured.

Impact assessment remains dominated by quantitative approaches ([Mayoux and Chambers, 2005](#)). There is a lack of participatory methodological frameworks that are easily applicable and that link sustainable agricultural development and food security. In this study, we developed a framework for the application at a local level with small-scale farmers; the framework links sustainability and food security with the goal of being applicable in different geographical contexts, particularly in developing countries. We applied the framework at four different case study villages in rural Tanzania to assess the sustainability impacts of planned agricultural UPS to enhance food security and to identify the positive and negative impacts; the advantages and risks are assessed from the farmer's point of view in regards to social life, economy and the environment.

2. Methods and materials

2.1. Study area

This study was carried out in four Tanzanian villages: Ilakala, Changarawe, Ilolo, and Idifu. These villages are located in two regions: Dodoma and Morogoro. The villages Ilakala and Changarawe are located in the semi-humid Morogoro Region in the Kilosa District. Ilolo and Idifu are situated in the semi-arid Dodoma Region in the Chamwino District. The two regions represent the majority of farming systems in Tanzania ([USAID, 2008](#)). The food systems in the predominantly semi-humid (600–800 mm) Morogoro Region are more diverse and are primarily based on maize, sorghum, legumes, rice and horticulture and partly based on livestock. In the semi-arid (350–500 mm) Dodoma Region, the food system is primarily based on sorghum and millet, with a long history of livestock husbandry ([Mnenwa and Maliti, 2010](#)). Food and livelihood security in the case study villages in Dodoma and in Morogoro depend on sufficient and well distributed rains ([USAID, 2008](#)). Approximately 35% of the population in Morogoro and only approximately 21% in Dodoma are engaged in non-farm agriculture. The Dodoma Region is particularly sensitive to food insecurity, whereas Morogoro has both food-insecure and food-secure areas. In Tanzania, Dodoma has, by more than 80%, the highest rate of stunted children under five years old. The level of child stunting in Morogoro is slightly above the Tanzanian national level of approximately 60% ([URT, 2011b](#)). In both regions, the population density is less than 50 persons per square kilometre ([URT, 2006](#)). The annual population growth rate is higher in Morogoro (2.6) than in Dodoma (2.2). In Morogoro, approximately 17.9% of men and 24.2% of women have no access to education, while in Dodoma, it is even higher, at 33.2% of the males and 39.6% of the females ([URT, 2011a](#)).

2.2. Framework for participatory impact assessment

The methodological approach used for the UPS impact assessment is based on the Framework for Participatory Impact Assessment (FoPIA). Originally, the FoPIA was designed to complement quantitative computer-based sustainability impact assessment tools in the European context with a qualitative participatory approach ([Helming et al., 2011](#)) and was first described by [Morris et al. \(2011\)](#). Simultaneously, the

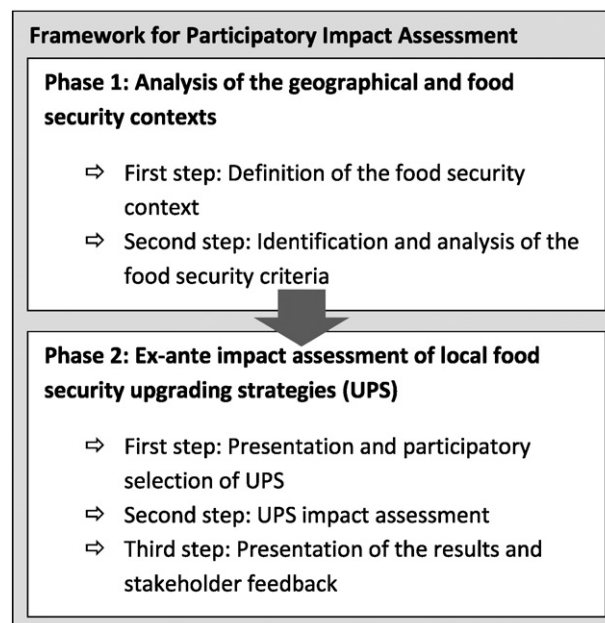


Fig. 1. Adapted schema of the FoPIA.

FoPIA was adapted and further developed by [König et al. \(2010\)](#) to be applicable in the context of developing countries ([König et al., 2012, 2013](#); [Purushothaman et al., 2012](#)). The FoPIA provides a general assessment framework with a sequence of methods for conducting sustainability impact assessment in different regional contexts ([Morris et al., 2011](#)). However, it has mainly been applied to assess alternative land use policies at the policy maker level in different regional contexts ([König et al., 2013](#)).

In this study, the FoPIA was further developed to be applicable at the community level to adapt food security strategies to the local conditions and needs. The objective is that the local population assesses the impacts of proposed agricultural UPS before their implementation. With the help of impact assessment, the main challenges of interventions are analysed, providing the opportunity to select, adapt and modify measures ([Silvestrini, 2011](#); [Schindler et al., submitted for publication](#)). To be applicable at the rural community level, the methods used must be comprehensive and must consider local cultural conditions ([Mayoux and Chambers, 2005](#); [Reed, 2008](#)). This modified FoPIA comprises two main parts: 1) analysis of the geographical and food security contexts; and 2) ex-ante impact assessment of local food security UPS. The following methodological steps are a series of successive participatory workshops (see [Fig. 1](#)).

2.2.1. Phase 1: analysis of the geographical and food security contexts

The first phase of this methodological approach focuses on understanding the local context and the food security situation ([Reed, 2008](#)). The focus here is on the local understanding and definition by the local population rather than on descriptions based on a literature review and secondary data.

⇒ Phase 1: first step: definition of the food security context

At each case study site, we conducted focus group discussions with women and men; each were held separately with 15 to 19 participants ([Schindler et al., submitted for publication](#)). The criteria used to guarantee a diverse selection of participants who represented the village community were as follows: (I) representation of all sub-villages; (II) different age groups (young: age 15–25 years, adults, elderly people: age > = 60 years); (III) persons of different marital statuses (married, single, widow); (IV) a diversity of major occupations practised at the case study site (farming, pastoralism, activities other than farming); (V) the economic status of the household (poor, moderate, better off); (VI) the diversity of land

¹ Upgrading strategy (UPS) is a best practise which aims at enhancing food security in the local context.

Download English Version:

<https://daneshyari.com/en/article/1052633>

Download Persian Version:

<https://daneshyari.com/article/1052633>

[Daneshyari.com](https://daneshyari.com)