

Kilimo na Masoko - Farming for the Market Project

Final Report for the Research Component

Prepared by:

Dr. Emmanuel T. Malisa¹
Dr. Suzana S. Nyanda²
Prof. Christopher P. Mahonge³
Dr. Raymond J. Salanga¹

¹Department of Development and Strategic Studies, Sokoine University of Agriculture

²Department of Sociology and Anthropology, Sokoine University of Agriculture

³Department of Policy, Planning and Management, Sokoine University of Agriculture

30th September 2022

1. Introduction

1.1 Background information

Kilimo na Masoko – Farming for the Market pilot project was implemented in Morogoro Municipal Council and Mvomero Districts for two years (2020-2022). The project was implemented by four partners, namely: Research, Community and Organisational Development Associates (RECODA); Sokoine University of Agriculture (SUA); Adventist Development and Relief Agency (ADRA) Tanzania; and ADRA Denmark, in collaboration with the two districts councils. Each partner was expected to bring their expertise into the pilot project in order to complement each other. In addition to the technical knowledge, RECODA, which pioneered the establishment of the Rural Initiatives for Participatory Agricultural Transformation (RIPAT) approach, brought in community sensitization for mindset change and skills on community mobilization to take action at group level and individuals in improving their livelihoods and resilience. Sokoine University of Agriculture (SUA) contributed research and documentation skills into the project. ADRA Denmark, which developed the Farmer Market School (FMS) approach, was mainly responsible for building the capacity of the other partners in implementing FMS. ADRA Tanzania, which has long experience in livelihoods interventions, participated in the implementation, monitoring and evaluation of the pilot project.

The project aimed at determining the complementarity and synergy of the RIPAT approach, which is already being successfully implemented in Tanzania, and the FMS approach, which has shown positive results in other countries. While the RIPAT approach has proven to work well in bridging the agricultural technology gap for increased productivity, there are limitations in aspects related to agricultural (crop and livestock) marketing. Thus, Kilimo na Masoko (K&M) pilot project combined the RIPAT approach and the FMS approach with the aim to build the farmers' capacity to produce and market their crops. FMS focuses on enabling smallholder farmers to explore and analyse the market to better understand the dynamics that determine the market and the value chains. The RIPAT approach mainly focuses on facilitation of the uptake of technologies (bridging technology gap) through empowering of farmers on group formation and dynamics. The RIPAT groups are then used as a platform for learning by doing of the several improved agricultural technologies (basket of options) for increasing yields.

Therefore, it was hypothesized that the two approaches, which have common interest and are seemingly complementary, would build the capacity of the farmers to produce and market selected farm commodities for income generation and food security enhancement. It was expected that the combination of the two approaches would also enable the smallholder farmers to form demand driven farmer groups to strengthen their position in the value chains. Also, the two

approaches would sensitize the community members for mindset change and organise the farmers to take action in the improvement of their livelihoods and resilience through agriculture.

Moreover, the introduction of the FMS to an on-going RIPAT project¹ was expected to reveal how the two approaches could work together. Theoretically, when two approaches are combined, they either conflict or complement one another. The fact that the two approaches are seemingly rooted in the same philosophical stance, that is, building the capacities of smallholder farmers to manage their own development in a sustainable manner, supported the hypothesis that they might be compatible and complementary. The proposition on complementarity was also supported by the fact that one approach (RIPAT) is stronger in supporting production while the other (FMS) is stronger in marketing. The research attempted to answer the questions how the two approaches work together (compatibility) and whether or not they are complementary.

Through action research, the project was expected to generate findings on compatibility of the two approaches, and the outcome of the combination in terms of income generation and food security among the smallholder farmers in the project area. Also, it was the interest of the research to identify the determinants of effective combination of RIPAT and FMS approaches.

1.2 Overarching research question

What is the effect of combination of the FMS approach and the RIPAT approach with respect to smallholder farmers' income and food security?

Specific research questions

- How do the RIPAT and FMS approaches work together?
 - What is the effect of the pillars/elements of one approach to the pillars/elements of the other approach? (complementary *vs* conflictive)
- What effect does the FMS/RIPAT combination have on income and food security of smallholder farmers?

1.3 Objectives

- i) To assess compatibility of the FMS and RIPAT approaches

¹ The K&M project involved introducing FMS approach as an add-on market module to on-going RIPAT groups. The groups were under RIPAT-SUA project, which was implemented jointly by RECODA and SUA from Feb 2018 to June 2021, and which used the RIPAT approach. Therefore, K&M project, which started in Oct 2020, used both FMS and RIPAT approaches.

- ii) To determine the effect of RIPAT-FMS combination on income and food security of smallholder farmers
- iii) To identify the determinants of effective FMS and RIPAT combination.

2. Methodology

2.1 Study area, sampling procedure and sample size

The study was conducted in seven villages from Mvomero District and two wards from Morogoro Municipal Council. From these villages/wards, 13 RIPAT Start² and RIPAT Spreading I groups were selected because they met the minimum standards required for a group formed following the RIPAT approach. Therefore, RIPAT Spreading II groups, which were about one-year-old were not considered. In order to isolate the effect of the combined RIPAT-FMS approaches from RIPAT approach only, five randomly selected groups were denied any intervention from K&M project while eight groups received the project interventions. Names of the villages/wards and the groups are presented in Table 1. The same table shows the number of respondents selected for the survey and those selected from the project area for comparison purposes (the non-participants).

For data collection purposes, 321 respondents were selected from the project area. These were selected from three categories, namely RIPAT only group—farmers who participated in a project which used the RIPAT approach (93 respondents); RIPAT and FMS group—farmers who participated in a project which used the RIPAT approach and in another project which used the FMS approach³ (100 respondents); and non-group members—farmers who did not belong to any group (128 respondents). The non-group members served as a control group—for comparison purposes (Table 1). For the groups, at least 12 farmers (about 50% of the group members) were randomly selected from each group.

Table 1: Number of respondents by group

²Classic RIPAT approach is implemented in two phases namely RIPAT Start, which involves formation of groups which will start implementing the project activities, and RIPAT Spreading which involves formation of groups in neighbourhood villages/streets/wards a year or two later. During the spreading phase, group formation is facilitated by lead farmers and government extension officers with supporting organization playing only a technical backstopping role.

³RIPAT-SUA project, which used the RIPAT approach, was implemented in the area with 16 initial groups (8 during RIPAT-Start phase and 8 during RIPAT-Spreading I phase) between February 2018 and June 2021 whereas *Kilimo na Masoko* project, which used the FMS approach, was implemented with 8 of the RIPAT-SUA project's initial groups from October 2020 to September 2022. Five (5) of the groups which were not involved in the *Kilimo na Masoko* project have been selected randomly and treated as RIPAT only groups (RIPAT-SUA project's final report, 2021; *Kilimo na Masoko* project proposal, 2020).

District	Village/Street name	Group name	FMS & RIPAT group members	RIPAT group members	Non-group members
Mvomero	Mnyanza	Twikindem	-	15	13
		Chikena	-	19	
Morogoro Municipal	Mgambazi	Faraja	12	-	5
	Magadu	Maendeleo	12	-	12
	Kauzeni	Mshikamano	12	-	10
Mvomero	Tangeni	Tupendane	12	-	12
Mvomero	Mkuyuni	Uchumi	12	-	12
Mvomero		Tukaleghoya	13	-	
Mvomero	Changarawe	Nuru	-	19	18
Mvomero		Amani	-	18	
Mvomero	Peko	Tukalehamwe	-	22	20
Mvomero	Kipera	Mashujaa	15	-	16
Mvomero	Mlali	Umoja	12	-	10
Total			100	93	128

2.2 Data collection

Data collection tools, namely questionnaire, focus group discussion guide and checklist of questions, were prepared and pretested prior to actual data collection, and enumerators trained. Six enumerators, accompanied by two researchers administered questionnaires. Data from pre-testing were analysed and necessary improvements made to the tools. Also, prior to data collection, the researchers participated in training on FMS approach, the aim being to equip them with the necessary knowhow well in advance.

Questionnaire survey was used to collect quantitative data whereas focus group discussion, in-depth interview and key informant interview were used to collect qualitative data. Direct observation was employed to validate the data collected through the other methods. To achieve this, the researchers visited the farmers formally and informally to observe their involvement in various activities. Moreover, at least one researcher attended some of the project's weekly feedback meetings, which involved the project field officers, managers and FMS expert from Denmark. Other routine activities implemented by the researchers included reading project progress reports and presenting research activities progress to project implementers.

Questionnaire survey: A questionnaire was administered to the 321 respondents (Table 1) with the aim to solicit their socio-demographic information, physical characteristics of the study area, income and food security statuses, and information regarding crop and livestock production and marketing.

In-depth interview: Two farmers were selected from each of the 13 groups, not on the basis of representation but rather on the assumption that all the group participants possessed the investigated characteristics. However, an attempt was made to make sure that one of the participants was a male and the other was a female. The aim was to examine the determinants of effective combination of RIPAT and FMS approaches. Farmers were interviewed at their households or at convenient places where they were found.

Focus group discussion: From each of the 13 groups, 7-8 members were purposively selected for participation in focus group discussion (FGD). The selection process ensured inclusion of male and female members, and group leaders. Thus, a total of 13 FGDs were conducted. Among others, the FGDs were meant to obtain farmers views regarding the combination of RIPAT and FMS approaches in terms of factors seen as enhancing and those which are seen as constraining the effective integration, and the modalities with which the approaches were introduced.

Key informant interview: Using a checklist of questions, the following were interviewed as key informants: project implementers (1), Ward/Village Extension Officers working as FMS facilitators (3), ward/village leaders (2). Thus, a total of 5 key informants participated in the research. Key informant interview was meant to gather information regarding the effect of RIPAT pillars on FMS pillars and vice versa, and solicit opinions on the effect of the project on food security and income.

2.3 Data analysis

For the assessment of compatibility of the FMS and RIPAT approaches, the study endeavoured to establish the effect of the pillars of one approach to the pillars of the other. RIPAT pillars are i) Creation of a vision of a better future (community sensitization, help to self-help, mottos); (ii) establishment of farmer groups; and (iii) close collaboration with local government authorities (LGAs). FMS key elements are (i) discovery learning, and (ii) collective marketing. The interest was to establish whether combining the pillars of the two approaches lead to complementary or conflictive relationship. Complementary relationship involves filling the gap left by the other approach while conflictive, also referred to as competing, results from incompatibility of the approaches.

The Propensity Score Matching (PSM) technique was used to assess the impact of integrated intervention approach on income and food security. PSM employs a predicted probability of group membership (e.g., treatment vs. non-participant group) based on observed predictors such as pre-treatment demographic, socio-economic and clinical characteristics usually obtained from logistic regression to create a counterfactual group. PSM has become popular and applicable in all

situations where there exists a treatment group and a group of untreated. It does not require randomization, nor baseline for impact analysis and requires large sample to make precise outcomes. Under PSM, the Average Treatment Effect on the Treated (ATT) is equal to the expected difference in the observed outcomes between participants and matched non-participants.

In order to identify the determinants of effective combination of the RIPAT and FMS approaches, descriptive statistics and multivariate multiple regression analysis were applied. Multivariate multiple regression model was applied to determine factors affecting effectiveness of RIPAT and FMS approaches on improving household income and food security using STATA 14. The effectiveness of the combination of RIPAT and FMS was measured after developing Effectiveness Indices (EI) for income and food security which comprised proportion of income of each participant relative to control and was measured as income/food diversity of farmer who participated in RIPAT and FMS. Key variables included in the model are Village and Savings and Loan Association (VSLA) membership, soil conservation practices, use of improved seeds, vaccination, use of improved feeds and irrigation, collective marketing, production of new crops as a result of market survey, and awareness and value addition practices.

Data from in-depth interview, key informant interview and focus group discussion were analysed using content analysis. The main proposition of the research was, RIPAT and FMS are complementary and build the capacity of farmers to produce and market selected farm commodities for income generation and food security. Transcription of the in-depth interviews was done followed by thematic analysis. In this regard, the many words of text transcribed from recorded information were compressed into fewer content categories resulting in synthesized meaning based on the study objective.

2.4 Validation of research findings and project monitoring

Preliminary findings from the research were presented at three forums for validation. The first forum involved project implementers namely ADRA Denmark, ADRA Tanzania and RECODA, with the LGAs represented by Morogoro Municipal Council and Mvomero District Project Coordinators. At this forum, findings relevant for compatibility of RIPAT and FMS were presented and comments for improvement solicited. The second forum involved the same organizations and ADRA Malawi Country Director. At this forum, in addition to a presentation of an improved version of the findings presented at the first forum, findings on the impact of RIPAT-FMS combination on income and food security were presented and discussed. The third forum brought together a more diverse group of project stakeholders including researchers from SUA, project implementers from ADRA and RECODA, Morogoro Municipal and Mvomero District Council staff, representative farmers from the project area, NGOs representative and ward/village leaders. At this forum, three draft

manuscripts emanating from the project were presented and discussed. Two of the manuscripts were improved versions of the drafts presented in the first and/or second forum(s). The last forum served also as an avenue for dissemination of the research findings (details are presented in the feedback/lessons sharing report).

Other project monitoring activities include discussion of the project at the Board of the College of Social Sciences and Humanities, field visits by SUA researchers, participation in project progress monitoring meetings and reporting progress on quarterly basis. Project monitoring involved also a visit by students doing MA Project Management and Evaluation at SUA, during their field excursion which was part of their practical classes in project monitoring and evaluation.

3. Key research findings

Comments raised during the forums presented in Section 2.4 were used to improve the manuscripts. Key findings from the research, including the policy implications are presented below:

- RIPAT and FMS approaches are compatible and complementary. When the key elements of the FMS approach are combined with the pillars of the RIPAT approach, influence on their performance occurs both ways; that is, FMS influences RIPAT's performance and vice versa, and the influence is largely positive
- There is a positive but not statistically significant difference in levels of income among farmers enrolled in project applying both RIPAT and FMS approaches, those under project applying the RIPAT approach only, and non-participants
- Both the combined RIPAT-FMS and RIPAT only interventions have a positive but not robust effect on household food security
- The determinants of effective combination of RIPAT and FMS:
 - with respect to income, the determinants include: village savings and loan association (VSLA) membership, value addition practices, vaccination of poultry, improved seeds, access to irrigation and collective marketing
 - with regard to food security (food intake diversity) the determinants are VSLA membership, use of improved feeds and use of improved seeds
 - the modality of introducing the approaches to the community and climatic changes are also important determinants

Policy implications

- Agricultural interventions ought to integrate both production and marketing aspects in order to enhance households' food security and income

- Agricultural interventions targeting smallholder farmers need to take into account key factors to increased productivity, income and food security: access to irrigation, use of improved seeds, use of improved livestock feeds, vaccination of poultry, value addition, collective marketing and savings and lending schemes
- Diffusion of technology: future efforts need to do more on getting things done beyond the demo plots/group training. Currently there are issues with:
 - Approaches used (e.g. farmer groups – how should a group look like?, group leadership?, are constitutions enforceable?; mindset change – vs strongly held beliefs and practices)
 - Extension (wide extension : farmers ratio, motivation, M&E capacity and guidelines)
 - Institutional and environmental factors (drought, irrigation, marketing)
- This calls for: Proven approaches, guidelines, lead farmers, motivated extension officers, production & marketing combined
- Based on this research:
 - RIPAT offers some light
 - Combination of RIPAT and FMS is a good example towards promoting production and marketing of smallholder farmers’ agricultural produce.

4. Dissemination of the research findings

Avenues for dissemination of the research findings include the following:

- Feedback/lessons sharing workshop: On 23/9/2022 a workshop was conducted at SUA bringing together 41 participants from the local government authorities, NGOs, SUA, and the farming communities (see feedback/lessons sharing report for details)
- Social media and SUA website: <http://suamedia1994.blogspot.com/2022/09/sua-recoda-na-adra-zaja-na-mradi-wa.html> and <https://www.sua.ac.tz/news/feedbacklessons-sharing-workshop-based-kilimo-na-masoko-farming-market-pilot-project>
- Journal articles: at least two papers will be published in peer reviewed journals for access by scholars and practitioners worldwide (see manuscripts 1&2, which are ready for submission to journals; they will be submitted in October this year). Manuscript 3 will be submitted to a journal later this year whereas manuscript 4, for which data analysis has just started, will be submitted to a journal early next year. The manuscripts are:
 - Manuscript 1: Impact of Combined Rural Initiatives for Participatory Agricultural Transformation and Farmer Market School Approaches on Income and Food Security
 - Manuscript 2: Determinants of Effective Combination of Rural Initiatives for Participatory Agricultural Transformation (RIPAT) and Farmer Market School (FMS) Approaches

Manuscript 3: Compatibility of Rural Initiatives for Participatory Agricultural Transformation (RIPAT) and Farmer Market School (FMS) Approaches

Manuscript 4: Development and Performance of Organized Community Groups: A Case of Selected Farmers' Groups in the Uluguru Mountains, Tanzania

- Research project report: the Kilimo na Masoko Project's Research Component Report will be shared with SUA students who may wish to conduct further research.
- Visit to the project area by SUA students: Students doing Bachelor of Veterinary Medicine and MA Project Management and Evaluation visited the project area. Through the field excursions, the students had an opportunity to exchange with farmers and project officers, and learn from the project activities that were being implemented.

Along with the research activities are three activities namely, policy seminar, reflection on FMS and RIPAT approaches, and project's process evaluation by students-done as part of their practical exercises. These are aimed at concretizing the policy recommendations emanating from the Kilimo na Masoko pilot project.

5. Conclusion and the way forward

The research objectives for this pilot project have been addressed as planned. Overall, the hypothesis has been accepted and therefore, the RIPAT and FMS approaches are complementary and build the capacity of the smallholder farmers to produce and market selected farm commodities for income and food security enhancement. However, given the fact that the study was restricted to only one scenario, that is, FMS introduced as an add-on market module to on-going RIPAT groups, there is a need for a similar study around the other two RIPAT-FMS combination scenarios. The scenarios are concurrent introduction of RIPAT and FMS approaches, and FMS introduction as an add-on market module to already graduated RIPAT groups. Moreover, there is a need to conduct similar study in different locations in order to explore the performance in different agro-ecological and cultural environments. Lastly, as recommended by the last two forums, there is a need to conduct similar study in the same area two to five years later in order to factor in the time effect. The research findings show that, with sustained use of technologies and the know how gained through Kilimo na Masoko and RIPAT-SUA projects, there is likelihood of more positive impact of RIPAT-FMS combination on income and food security of smallholder farmers.