

System perspectives on farmer innovation for diverse farming and diets in Teso-South, Kenya

Study and workshop report



Luisa Goss, Lydia Waswa, Dorine Oware, Grace
Khatenya, Thomas Pircher, Thomas Hilger

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2 Introduction

2.1 Background of the study

Nutrition-sensitive agriculture and diverse diets have been identified as strategies for improving nutrition. However, little is known about the interlinkages between consumption and production strategies, and the preconditions and incentives required for farmers to engage in diversified crop production. The EaTSANE project applies an integrated research approach for innovation and capacity strengthening to facilitate systemic changes in the food system. **The EaTSANE project aims to implement sustainable farming practices and improve diets of households in Kenya and Uganda by diversifying the food system with a participatory action learning approach.** The specific objectives of the project are:

1. Identifying and promoting improved farming practices for healthier soils and production of diverse, nutritious crops;
2. Improving access of value chain actors to inputs and services, their links and reducing food losses through improved handling and processing practices; and
3. Enhancing consumers' food culture, resulting in healthier diets and more equitable distribution of food in households.

Through communication and education activities, learning modules on sustainable farming practices and diversified diets will be developed and implemented with schools, young farmer clubs, education experts and national curriculum development centers. The research teams, together with farming communities, will co-create knowledge on the use of conservation agriculture practices for sustainable production of nutrient-rich and diverse foods, improved soil fertility, on obstacles and opportunities for farmers to engage in diversified production, and improvement of households' food culture. Findings from the studies will lead to scientific publications and provide the basis for policy dialogue and knowledge-sharing activities on a national level with a particular focus on women and youth.

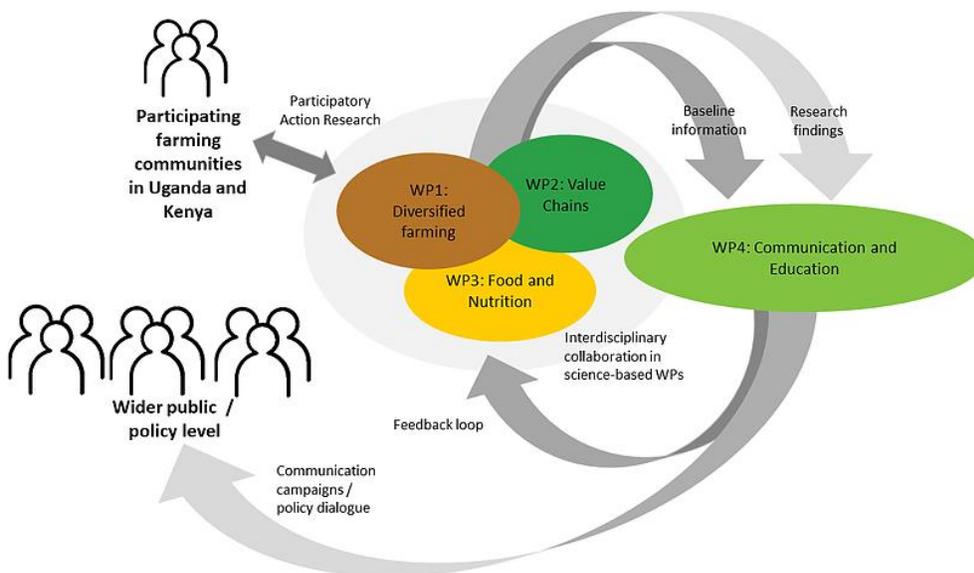


Figure 1: Work Package structure in EaTSANE

Work package (WP) 4 on Communication and Education has a focus on integrating results from WPs 1 to 3 and creating impact on a wider scope beyond the project area. A pathway through education and training aims to increase knowledge to promote more sustainable farming practices and healthier diets. In addition, policy dialogue on multiple levels will help to create enabling conditions for behavior change, i.e. diversification of farming and diets. This dialogue will discuss findings from the research-based work packages 1 to 3 and relate these findings to the current context of farming in the project areas. To understand prevailing conditions and identify leverages for policy action, we carried out a study on farmers' innovation processes towards more diverse farming and nutrition practices as well as drivers and constraints in this process. The study was implemented by an interdisciplinary team of students from Egerton University, Makerere University and University of Hohenheim in Kapchorwa (Uganda) and Teso South sub-County, Busia County (Kenya).

2.2 Study approach and methodology

Prior to the field study, the study team carried out key informant interviews with WP leaders of the EaTSANE project. The key informant interviews provided insights on action research activities in the field, available project reports and preliminary findings. In the next step, all relevant project documents and study reports were reviewed by the study team in regard to drivers and constraints as well as the influence of other actors on the food system. These materials included master theses, field reports, workshop reports and focus group discussion reports. The results from the key informant interviews and literature reviews informed the study design and field activities and were used to triangulate findings from the field. For a detailed study methodology and results see reports by Magdalena Nertinger and Luisa Goss (MSc students of Hohenheim University).

Prior to the beginning of the field work in Kenya / Uganda, the study team met for a preparatory workshop in Mbale, Uganda. During the workshop the study team developed a joint understanding of underlying concepts and research methods for stakeholders mapping that were applied in the field. The topics discussed during the workshop included:

- Concepts of technology adoption and diffusion, and farmer innovation;
- Systems thinking and research in the field of food systems, with regard to farming practices, nutrition and value chains;
- Collecting and analysing qualitative data;
- Conducting focus group discussions (FGDs) (steering discussion, being inclusive of gender, data recording);
- How to create stakeholder maps with Venn Diagrams incl. ranking of their influence on the innovation process;
- Whom to consider as stakeholders in the study (e.g. EaTSANE project members, other farmers, Community health workers (CHVs), traders, agricultural extension etc.);
- Intercultural issues to keep in mind when going to the field;
- Presentation of findings from literature review on drivers and constraints.

After the preparatory workshop, the study team was further split up into two teams in order to carry out the field work in both research areas - Kapchorwa, Uganda and Teso South sub-County, Busia County, Kenya - at the same time. The field work in the study areas was organized in three phases:

Phase 1: Meeting with farmer groups that engaged in the action-research initiatives of the EaTSANE project through FGDs.

1. *FGDs to understand if and how the farmers tried to use the promoted practices:*
 - Who of the group members tried to use the promoted practices and engaged in nutrient-dense value chains?
 - For whom of the farmers in the group did the proposed technologies work and for whom they did not work?
 - In what forms did farmers use the technologies? How did farmers adapt the promoted technologies to make them work best for their farms / households?
 - Possibly arrange for farm visits after the FGD with the farmers who were currently using new farming practices in order to get detailed information on the same.

2. *FGDs to elucidate drivers / constraints and map related actors in the food system*
 - What were the constraints and drivers for farmers to innovate?
 - Which of these constraints / drivers can be related to actors in the food systems?
 - Find out whether the aspects identified in the key informant interviews and literature review – were also relevant for the farmers in the groups?
 - Develop Venn Diagrams of the stakeholders and their influence on the innovation process: Drawing a map of actors in the food system and ranking their influence on the (adapted) use of the promoted technologies.

Phase 2: Understand perspectives and motivations of identified food system actors

Based on findings from phase 1, the study team carried out individual interviews with key stakeholders in order to:

- Understand their role and underlying reasons that has led to driving / constraining the innovation processes of farmers;
- Identify other actors and conditions that influence them (further develop food system maps, incl. inter-relations, feedback loops, etc.);
- Invite most influential stakeholders to stakeholder workshop.

The final outcome of the study are food system maps¹ with enhanced stakeholders and underlying conditions for identified key stakeholders.

¹ The food system, which EaTSANE addresses, is an open system. EaTSANE's sphere of influence is in a sub-system to the food system, which boundaries will be demarked in the food system maps. The mapping exercises therefore does not aim to cover the full range of local food systems, but to describe boundaries and "external" influences on the sub-system in which EaTSANE's action research takes place.

Phase 3: Consolidation of food systems maps with key stakeholders

The results of the study in phase 1 and 2 were validated and discussed in stakeholder workshops with decision makers (district officers / sub-county officers) and other key stakeholders (farmer innovators, other food system actors that supported the innovation process). The workshops addressed the following topics:

- Update workshop participants on the progress of implementing the EaTSANE project;
- Present impact of EaTSANE on farmers innovation processes towards diversification of farming and nutrition practices;
- Present identified food system maps;
- Ask workshop participants to validate and adapt the maps;
- Discuss strategies for communication and training with all workshop participants:
 - Which organizations work permanently in the region and that could be implementers of the EaTSANE training materials on a longer term? How could the EaTSANE project team collaborate with them?
 - How the EaTSANE project in collaboration with decision makers on a district/ sub-county level could contribute to creation of an enabling environment for farmer innovation that is based on the projects action research initiatives with farmer groups.
 - What issues must be addressed at a wider scope / higher-level policy dialogue? Who are the most important stakeholders for policy dialogue on a national level?

2.3 Schedule of the field work in Uganda and Kenya

Date	Study team Uganda	Study team Kenya	Thomas Pircher (study supervisor)
Sunday	23.02.2020	Arrival in Entebbe and go to Kampala; informal group meeting study team and preparation	
Monday	24.02.2020	Travel to Mbale; preparation workshop with study team	
Tuesday	25.02.2020	Travel to Kapchorwa, Meet district officials, organize group meetings	Travel to Busia, Meet Teso South sub-county officials, organize group meetings
Wednesday	26.02.2020	Field study in Kapchorwa	Field study in Teso South Sub-County
Thursday	27.02.2020	Field study in Kapchorwa	Field study in Teso South Sub-County
Friday	28.02.2020	Field study in Kapchorwa	Field study in Teso South Sub-County
Saturday	29.02.2020	Field study in Kapchorwa	Field study in Teso South Sub-County
Sunday	01.03.2020		
Monday	02.03.2020	Field study in Kapchorwa	Field study in Teso South Sub-County
Tuesday	03.03.2020	Field study in Kapchorwa	Field study in Teso South Sub-County
Wednesday	04.03.2020	Field study in Kapchorwa	Field study in Teso South Sub-County
Thursday	05.03.2020	Travel to Buisa	Workshop preparation
Friday	06.03.2020	Stakeholder workshop Busia	Stakeholder workshop Busia
Saturday	07.03.2020	Travel study group to Kapchorwa	Travel study group to Kapchorwa
Sunday	08.03.2020	Workshop preparation	Workshop documentation
Monday	09.03.2020	Stakeholder workshop Kapchorwa	Stakeholder workshop Kapchorwa
Tuesday	10.03.2020	Return travel to Kampala	Return travel to Kampala

3 Study findings

3.1 Findings from literature review

Luisa Goss carried out a literature review stakeholders for farmer innovation towards more diverse farming practices and diets as well as, drivers and constraints. The following table shows a summary of the findings.

Table 1: Summary of drivers, constraints and stakeholders identified in the literature review

Literature source	Main Drivers	Main Constraints	Stakeholders
Value Chain Platforms in the EatSANE Project – Value Chain Platforms (VCPs) - Launching the VCPs in Kenya & Uganda: report. Dhamankar, Mona. Bitzer, Verena, 2019.	<ul style="list-style-type: none"> - Access to knowledge - Sharing information and resources 	<ul style="list-style-type: none"> - Inadequate capital - Lack of storage facilities - Farmers demand of seeds is unpredictable, it changes in different seasons, which also affect the Agrovets storages to store the unsold seeds - Market prices → after harvesting the market is flooded with products, thus, the prices drop and the farmers need to look for markets beyond their villages/towns - Lack of transport facilities - Access to inputs - Access to knowledge 	<ul style="list-style-type: none"> - Farmers - Traders - Wholesalers - Brokers - Retailers
Field Visit Report. Winkler, Bastian, 2018.	<ul style="list-style-type: none"> - Dissatisfaction with the current Agricultural System, willing to change/adapt the production system - Innovations like Vertical Gardens 	<ul style="list-style-type: none"> - Environmental and climate change - Inadequate transport infrastructure 	<ul style="list-style-type: none"> - Farmer - Households
EatSANE Report - Trials of improved practices (TIPs), Kenya.		<ul style="list-style-type: none"> - Access to materials for construction 	<ul style="list-style-type: none"> - Farmers - Households
Master Thesis - Informal seed systems and their importance for food and nutrition security in East Africa - A case study from Kenya and Uganda. Nieland, Corrina, 2018. <i>(The thesis was part of the HealthyLAND project, but highly relevant for the work in EaTSANE</i>		<ul style="list-style-type: none"> - Agricultural prerequisites for production (low soil fertility; soil erosion; lack of agricultural workers; low yields during the drought). - Inadequate transport infrastructure (Federal roads) - Storage facilities - Pests and diseases affecting crops 	<ul style="list-style-type: none"> - Farmers - Seed suppliers

<i>and therefore included in the literature review)</i>		<ul style="list-style-type: none"> - Access and price of agricultural inputs - Weather conditions - Access to technical knowledge 	
<p>Master Thesis – Hindering and facilitating factors to increase fruit and vegetable consumption in Teso South, Kenya. Ferry, Marie Jill, 2019.</p>	<p>Regarding the trainings received on Trials of Improved Practices (TIPs):</p> <ul style="list-style-type: none"> - Households would be willing to change their behavior and implement the improved practices; they had more access to knowledge and saving resources. - Facilitating factors: weather conditions; access to products in markets; acceptance of family; willingness to change cooking practices; saving resources. 	<ul style="list-style-type: none"> - Weather conditions - Personal preferences of food - Other family members did not accept to implement the improved practices - Challenges to implement the improved practices. - Forgetfulness in regards to the improved practices - Negative outcomes of the improved practices 	<ul style="list-style-type: none"> - Households

3.2 Findings from field work in Kenya

3.2.1 Study methodology for field work

The study team in Kenya included: Luisa Goss (University of Hohenheim), Dorine Oware (Egerton University), and Grace Khatanya (Egerton University). They conducted FGDs in four villages in Teso South sub-County namely: Olupe, Obekai, Acuurut, and Palikite. The number of participant’s varied between 8 to 15 persons, and comprised of participants who were involved in the activities of WPs 1-3 in the EatSANE project. The FGDs were held in Kiswahili and focused around the following three main questions that led to comprehensive stakeholder maps:

1. What did you change in the past year, regarding agriculture, nutrition and value-chains?
2. Who was involved in this change?
3. Which factors enable/constrain you to innovate?



Figure 2: FGD with farmers in Paleketi, Kenya.

After identifying most relevant stakeholders during the mapping exercise, the study team members interviewed them in order to understand their roles with regard to the innovations mentioned by the farmers. The interview with each stakeholder was pre-structured, but different to identify their role in the constructed system as well as second level stakeholders.

3.2.2 Summary of identified innovations for diverse farming and diets

Innovations in the field of nutrition and diverse diets

Drying of vegetables and fruits: Some farmers who participated in the FGDs implemented the solar dryers promoted during the TIPs session as part of WP3 within the EaTSANE project. Due to the lack of material, most of the farmers used an alternative method of drying the vegetables on a sack. Farmers mentioned that they dried cowpeas, pumpkin leaves, spider plant leaves, black nightshade leaves as well as bananas and other fruits. They explained that they stored the dried vegetables and fruits in their households and consumed them during the season when the vegetables and fruits were not available.

Construction and use of improved stoves: During the WP3 activities, farmers were taught how to build improved cooking stoves with chimney using bricks, mud and pipes. Some of the farmers who participated in the FGDs constructed these improved stoves and reported that the chimney helped to remove the smoke from the inside of the house. This practice improved their cooking environment and reduced the amount of firewood needed for cooking.

Improved child feeding: During FGDs, mothers reported that they were now offering their children healthy snacks like fruits, enriching children's porridge with vegetables, vegetable oil, margarine, soy, groundnuts, fruits, soybeans, finger millet flour and maize flour. They mentioned that they mixed cowpeas and amaranth. In addition, they reported that they also learned that legumes were an alternative source of protein and that by first soaking them prior to cooking, was a faster way of preparing them in addition to using less fuel.

Most relevant stakeholders for nutrition practices beyond the EaTSANE project:

- Community Health Volunteers (CHVs): They provide information on nutrition. The CHVs receive trainings from the Health Care Workers in the Hospital, from NGOs like Ampath, Red Cross, from Chiefs and transmit the knowledge to the households in the village.
- Neighbours: They exchange knowledge with other farmers in the village and also inspire them to apply new practices in nutrition
- Village chiefs: They provide information on nutrition and share it directly with the farmers or through the CHVs.
- Secondary Stakeholders: Hospital, NGO

Innovations in the field of diverse farming practices

Line Planting of vegetable seeds like black nightshade. In the past farmers used to broadcast the seeds. The farmers agreed that line planting had benefits including faster weeding, easiness of spraying and better yields.

Polyculture (more than two crops) with cowpeas - black nightshade - kales; maize – soybeans - finger millet - groundnuts; and maize - beans - soybeans. The farmers learned that with polyculture it was possible to prevent soil erosion and improve soil fertility due to the nitrogen fixation.

Strata Cropping: The interviewed farmers learned from the EaTSANE project about the three strata food cropping system. Strata cropping is whereby the crops are enclosed with animal forages. Due to the lack of capital and limited access to forage seeds, the farmers modified this practice using only one strata. They utilized Napier grass to enclose their maize crop.

Most relevant stakeholders for nutrition practices beyond the EaTSANE project included:

- Agrovets who sell seeds and other inputs to the farmers. If they did not have required seed or if the prices were too high, farmers were not able to implement some practices that were promoted by the EaTSANE project.
- Local market sellers who sell cowpea seeds and vegetables for home consumption.
- Local seed traders who sell seeds of cowpea, amaranth, black nightshade, which are needed for farmers to practice polyculture.
- Agriculture Extension Officers who give trainings on farming practices to farmers and, as secondary stakeholder shares knowledge on farming practices with other stakeholders, such as the local radio station.
- Radio station (Emuria FM) shares information on crop rotation, livestock and hybrid seeds.
- Neighbours inspire other farmers regarding the innovations on nutrition (e.g. improved stove), and in diversification of agriculture (e.g. intercropping, polyculture).
- Village chief influences farmers on talk to farmers on general issues of agriculture and nutrition.
- Secondary stakeholders are seed suppliers who supply seeds to Agrovets and shops/markets.

Innovations in the field of nutrient-dense value chains

Development of a new market of dried cowpea leaves: After learning how to dry vegetables (mainly cowpea leaves), some farmers produced more dried vegetables than what they needed for their own consumption and hence they tried to sell them locally in the community. The farmers created a market for dried cowpea leaves.

Increased production and marketing of black nightshade, amaranth, cowpea: Farmers in the communities visited were used to growing black nightshade, amaranth and cowpea only in small amounts. An increased market for these nutrient-dense crops stimulated farmers to grow and market larger quantities. One of the interviewed farmer explained that he had started planting amaranth when he discovered that it was a profitable crop in the nearby trading center.

Most relevant stakeholders for nutrition practices beyond the EaTSANE project:

- A seed trader buys and sells seeds from the farmers at their farms
- Vegetable traders buy and sell vegetables from the farmers at their farms
- Consumers buy vegetables from shops and markets, vegetable traders and directly from farmers



Figure 3: Solar dryer, improved stove and dried vegetables.

3.2.3 Stakeholder maps

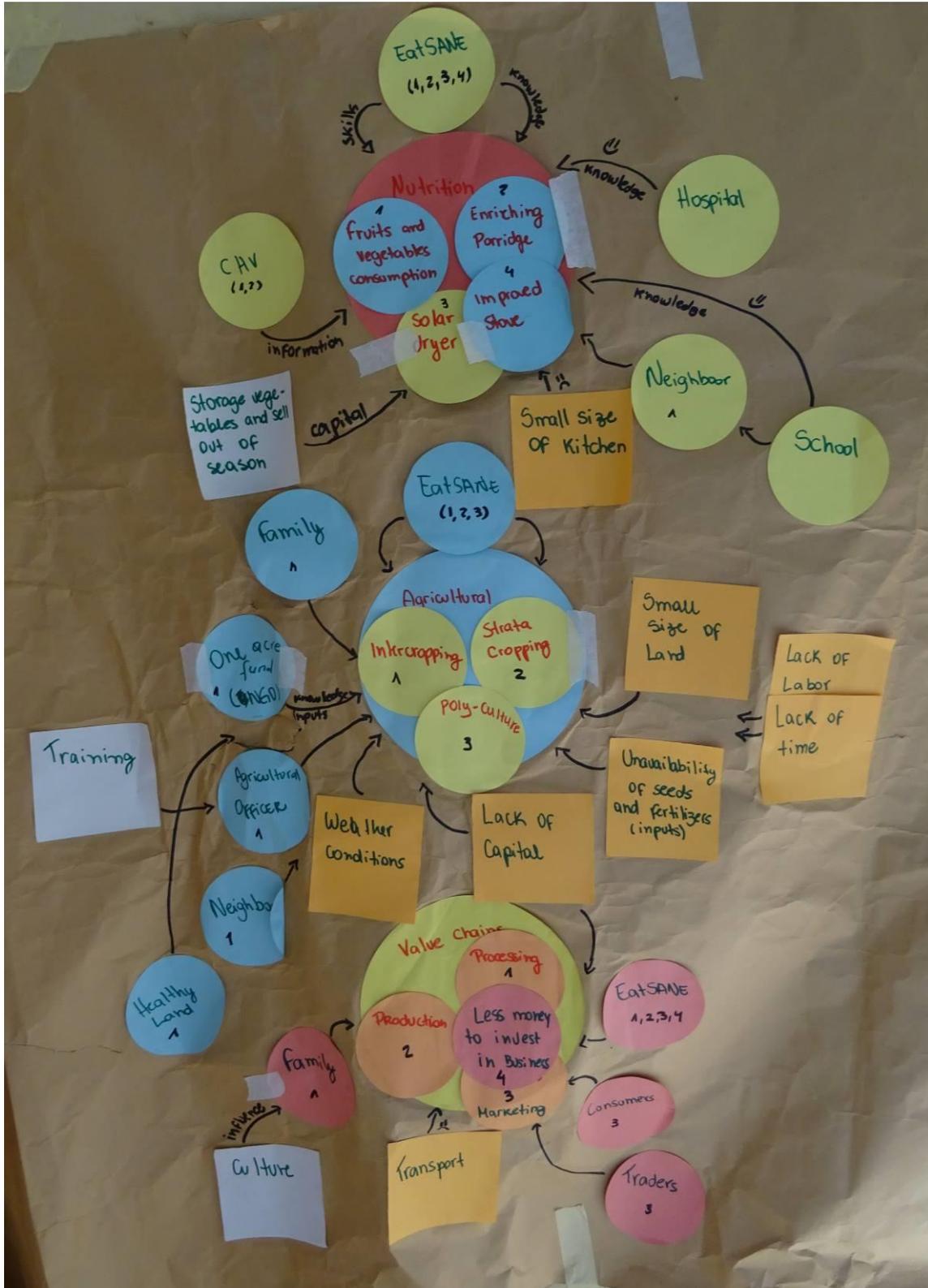


Figure 4: Stakeholder map in Olupe.

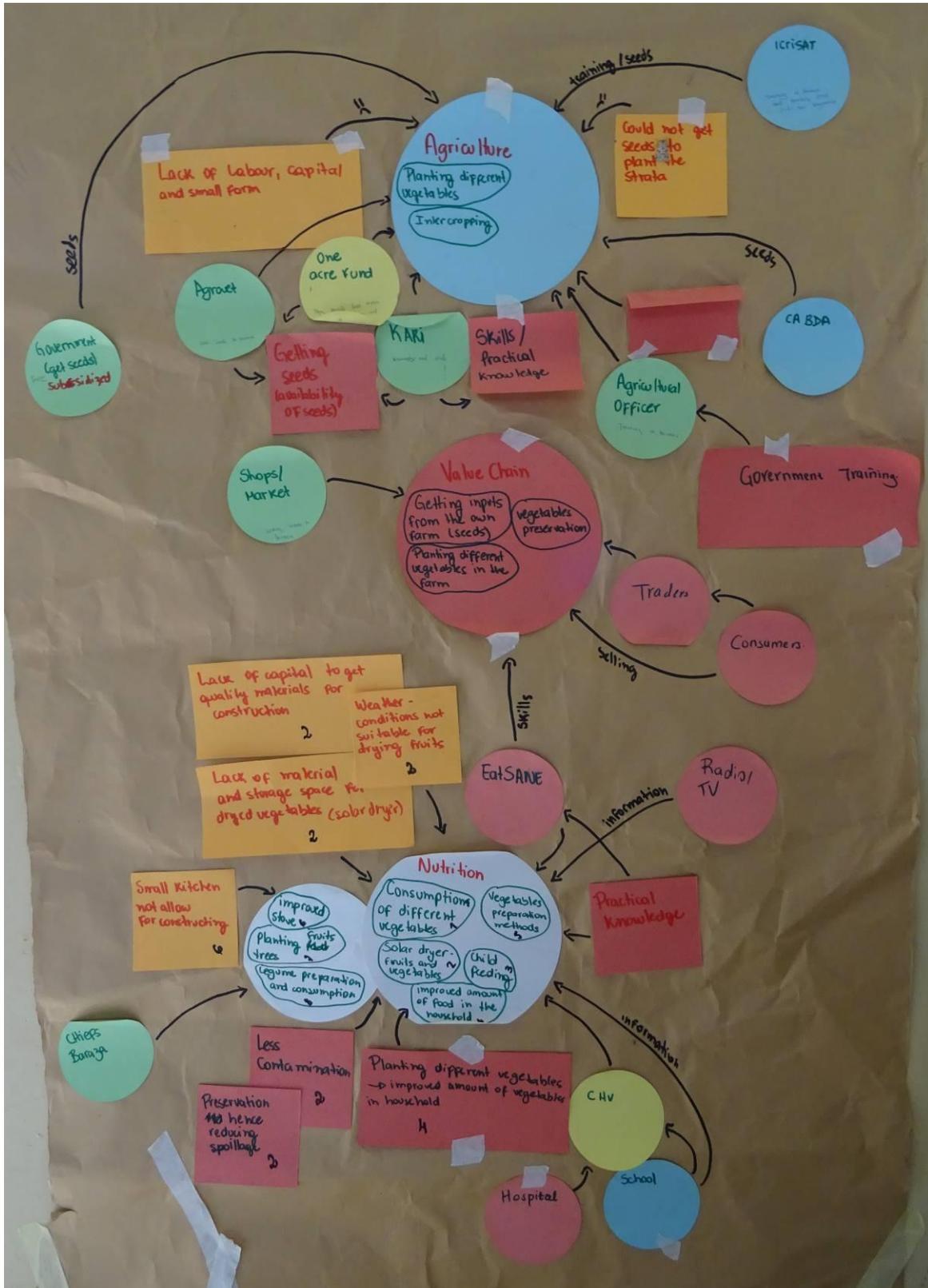


Figure 5: Stakeholder map in Obekai.



Figure 6: Stakeholder map in Achut.

4 Workshop report

4.1 Workshop agenda

The stakeholder workshop took place on Friday, 6 March 2020 in Busia, Kenya at the Agriculture Training Center (ATC).

Time	Topics / activities
9.30 – 10.00	Arrival and registration, Tea
10.00 – 10.15	Welcome participants and introduction to the workshop
10.15 – 10.30	Introduction of workshop participants and their involvement in the EaTSANE project
10.30– 11.00	Overview of EaTSANE project and implementing partners Update on implementation progress in Teso South
11.00 – 12.00	Study on farmer innovation for more diverse farming and nutrition (Identified innovations, drivers and constraints, stakeholder map) Verifying and enriching stakeholder map with inputs from workshop participants
12.00 – 13.00	Lunch break
13.00 – 13.45	Develop actionable measures to support farmer innovation from the perspective of - value chain actors and CHVs - communication and training in the EaTSANE project - decision-makers on a sub-county level
13.45 – 14.30	Enhancing stakeholder collaboration with the EaTSANE project on sub-county level (e.g. with communication and training materials)
14.30 – 15.00	Identify action points for policy dialogue and scaling on national level as part of EaTSANE activities in 2021 (e.g. national networks to engage and collaborate, national policies to address, policy briefs to produce)
15.00 – 15.15	Next steps and closure of workshop <i>Tea</i>

4.2 Participant list

Name	Organization / Role
Magdalena Nertinger	University of Hohenheim, Study Team Uganda
Judith Aliso	Makerere University, Study Team Uganda
Luisa Goss	University of Hohenheim, Study Team Kenya
Grace Khatenya	Egerton University, Study Team Kenya
Dorine Oware	Egerton University, Study Team Kenya
Thomas Pircher	University of Hohenheim, Project Manager EaTSANE
Lydia Waswa	Egerton University, Principal Investigator EaTSANE Project, Kenya
...	University of Amsterdam, MSc student carrying out a study on post-harvest loss of black nightshade in Teso-South
...	Teso South Sub-County Nutrition Co-ordinator
...	Teso South Sub-County Agriculture Officer
...	Teso South Sub-County Crops Officer
...	Teso South Sub-County Agriculture Extension
...	Represented the Teso South Sub-County Community Strategy Focal Person
...	Nutrition Facilitator, EaTSANE Project
...	Agrovet in Busia
...	Chief, Asinge Village
...	Community Health Volunteer (CHV)
...	Vegetable farmer and trader
...	Community Health Volunteer (CHV)
...	Vegetable Trader
...	Field facilitator (former extension officer)
...	Seed Trader Malaba

4.3 Introduction to the workshop

Thomas Pircher and Lydia Waswa welcomed all the participants and thanked everyone for their presence, even though the invitation was on short notice. They also welcomed everyone in name of EaTSANE's principal investigator Thomas Hilger, who could not come to the workshop. Thomas introduced the workshop objectives to the participants:

- Share updates on the implementation of the EaTSANE project;
- Present, verify and improve stakeholder maps;
- Identify and prioritize stakeholders and their influence on farmer innovation;
- Identify action points for stakeholder groups to support farmers and other value chain actors for more diverse farming and nutrition;
- Explore collaboration between key stakeholders and with the EaTSANE project;
- Identify action points for policy dialogue on national level and scaling.



Figure 8: Opening of workshop

After the introduction, all workshop participants briefly introduced themselves and explained their role in the food system as well as their involvement in the EaTSANE project.

4.4 EaTSANE project and updates on implementation

Thomas and Lydia briefly introduced the objectives of the EaTSANE project, the LEAP Agri program of which EaTSANE is part of, the implementing partners and the project site in Kenya and Uganda. They also presented the project concept including all work packages (WPs) and how they are linked to each other.

After the presentation, the project team of EaTSANE gave an overview on the objectives, activities, and the status of implementation of each WP:

- WP1 on diversified farming for better soils (presented by Dorine Oware, Egerton University):
 - o Sites and set-up demo plots;
 - o Design and benefits of three strata food system;
 - o School garden trials and principles of vertical gardens.
- WP2 on value chains and enabling environments for diversified food systems (presented by Judith Aliso, Makerere University)
 - o Scoping exercise to decide on focus crop for each country;
 - o Establishment of Value Chain Platforms.
- WP3 on food culture and nutrition (presented by Annet Itaru)
 - o Focus Group Discussion (FGD) with men, women and youths groups;
 - o Trials of Improved Practices (TIPs);
 - o Knowledge Sharing Workshops.
- WP4 on Communication, education materials and policy dialogue (presented by Thomas Pircher)
 - o Co-Creation workshops in Busia (ATC) in April 2019;
 - o Development of Happy Family Board Game;
 - o Communication materials and policy dialogue activities in the future.

4.5 Study on system perspectives on farmer innovation for diverse farming and diets

4.5.1 Introduction to study

Thomas introduced the background of the study on system perspectives on farmer innovation for diverse farming and diets in Kenya and Uganda, which has been carried out as an activity of WP4. Luisa Goss gave an overview of the field study in Teso-South by introducing the study team, explaining the methods used for the stakeholder mapping and the community that the study team visited (see Study approach and methodology).

After the introduction, Luisa briefly presented the findings from the literature review that she has carried out before the field study (see Findings from literature review). Then she presented the innovations that the study team has identified in FGDs with farmers (see Summary of identified innovations for diverse farming and diets).

4.5.2 Verifying and enriching stakeholder map

In a group setting with all workshop participants, Luisa shortly introduced the stakeholder maps creating in the four study communities and presented the summarized stakeholder map in detail to all workshop participants. Thomas co-facilitated the discussion of the stakeholder map, guided by the following questions:

- Is my position in the food system captured correctly on the stakeholder map?
- Is it captured correctly how I influence farmers in the described innovation processes?

- Did someone else influence me to do so? Who are the additional Stakeholders?



Figure 9: Discussion on the stakeholder map with workshop participants

The stakeholders that were present in the workshop showed their perspectives on their position in the stakeholder map and the related flows of knowledge. After the discussion, the map was enriched and improved together with all stakeholders from the workshop.

Village Chief:

- National and County Government gives information on Agriculture, value addition and child feeding in meetings. This information passes to community through Community Health Volunteers.
- NGOs inform what to tell to Community Health Volunteers through National Government.
- The position in the map is right.
- Ward Administrator.

Agricultural Extension Officer:

- AgroVets are considered a source of information, and work together with Extension Officers.
- Neighbours are a source of Information about pest and disease management, the information exchanges in both directions.
- Work with Radio, exchange of information in both directions. In radio shows, extension officers can play the role of experts on agriculture, using the radio as a means of communication to the farmers.
- KALRO can be a seed supplier to Agrovets, and also, offer trainings.
- Extension officers influence KALRO through feedback, exchange, communication.

- KEPHIS can be a seed supplier to KALRO and Agrovets. They do trials within the community.
- National government gives information and guidelines in regard to policies to Agricultural Extension Officer.
- Chiefs are also a source information on agriculture.
- Ministry of Health is also a source of information on nutrition.

Agrovets:

- Agrovets are the first ones to know new products that are on the market and therefore he is a source of knowledge on these products to the farmers.
- He is also involved in demo plots in the district.
- Agrovets are also in touch with NGOs to get relevant information and work together to support farmers.
- Connected to neighbours (= various farmers in the community).
- The Agrovet agreed on the position in the stakeholder map, but corrected it a bit closer to the farmers.

Health sector - CHVs and Teso South Sub-County Nutrition Co-ordinator

- There is a collaboration between hospitals and NGOs.
- Information and guidelines come from the national government and Ministry of Health.
- NGOs have to adopt policy from national governments.
- In the stakeholder map, hospital was selected as one stakeholder. During the discussion, the group later agreed that hospital is a too general term and corrected the stakeholder to “Health Care Workers”.

Farmers (group of farmer representatives):

The group mentioned the sources of information that are relevant for them and confirmed that they are captured in the presented map:

- Agricultural Extension Officers
- National government
- Radio
- Chiefs
- Neighbours
- NGOs: as a secondary Stakeholder, through Chief
- Agrovet
- KALRO
- For nutrition, from the Hospital – Health Care Workers

Vegetable Traders:

- Look for market for produced vegetables;
- Buy vegetables from farmers and sell or bring buyers to farmers;
- If extension officer knows of external markets, he can influence the community to produce more vegetables for the other market, and vegetable trader sells this produce to new market;

- There is a high demand for black nightshade. Therefore, they are using an improved variety of black nightshade.

Seed Trader:

- She sells the following seeds: Cowpea (two varieties), black nightshade, amaranth, spiderplant.
- She get the seeds that she sells from farmers.
- Consumers buy grain from her either for food or for seed.
- She sells to other traders outside her town.
- When there are no seeds from farmers available, she buys from outside markets e.g. in Uganda or other bigger cities of Kenya.

Further points of discussion:

- Agricultural Extension Officers are identified as actors outside the village in the maps. There are also officers within the villages.
- Agrovets also play a role in teaching farmers how to use the inputs, not just selling farm inputs.
- Community Health Volunteers (CHVs) get the information from Health Care Workers. Mentioning only the hospital is too general.
- There are losses when farmers get seeds from other farmers because they do not get the knowledge. That is why it is better for them to buy seeds from Agrovets.
- It is good to have dried vegetables.
- The map shows the true/widen the map.
- It is better to buy seeds from the Agrovet, but for e.g. cowpea, farmers prefer to get seeds from the market.
- Some farmers prefer recycled seeds.



Figure 10: Revised Stakeholder map after inputs from workshop

4.6 Measures to support farmer innovation

With the aim of developing actionable measures to improve diversified farming and diets and to support farmer innovation, Thomas asked the participants to sit in groups and discuss around this questions:

- What can we do to enhance diversifying of farming and diets?
- What do we want others in the room to do so that they can support us?

The workshop participants were organized in groups according to their role in the food system:

- Value-chain actors and Community Health Volunteers (CHV)
- EaTSANE project
- Decision makers on sub-county level



Figure 11: Group discussion and development of give-and-take matrix

All groups wrote their commitments towards more diverse farming and nutrition practices, and what they expect from the other groups on cards. After the group work, all workshop participants got together and presented their commitments to improve diverse farming and nutrition practices in Teso-South (Gives) on the whiteboard. After all groups presented their commitments, they addressed their expectation towards the other stakeholder groups (Takes). The stakeholder groups, who were addressed with these expectations, had the opportunity to accept (take), reject or discuss with the group to find a compromise to which they can commit.

The give-and-take matrix provided rich outputs and commitments from all stakeholder groups. In general, there were few rejections of ideas and a good collaboration among the stakeholders. Many workshop participants appreciated the experimental plots and showed engagement for the implementation in the future. The sub-county officials committed to support the continuation of the plots after the EaTSANE project ends.

Table 1: Give-and-take matrix that was developed and agreed upon in the workshop

Stakeholders	Commitments (responses to “takes” in brackets)
<p>Value-chain actors and CHVs</p>	<p>GIVE:</p> <ul style="list-style-type: none"> - Improve on skills and training, then sharing with others - Form producer groups and marketing groups - Produce according to demand, quality, quantity, network <p>TAKE:</p> <p>From Sub-county level:</p> <ul style="list-style-type: none"> - Major role in ownership of project - Be a role model - Commercialize dried vegetables as a business opportunity - Offer trainings (farmers that participated in EaTSANE) for other farmers <p>From EaTSANE:</p> <ul style="list-style-type: none"> - Create marketing groups, act together as a group to share information and in between the market interactions - Collaboration between farmers
<p>EaTSANE Project</p>	<p>GIVE:</p> <ul style="list-style-type: none"> - Have dialogue on a higher level, beyond district - Utilize other means of communication like media, radio, ambassador - Support stakeholders to provide knowledge that is relevant for farmers to diversify their diets and farming practices <p>TAKE:</p> <p>From Sub-county level:</p> <ul style="list-style-type: none"> - Create materials to enable farmers to train other farmers (accepted) - Increase training and facilitation on community level (trainings on agriculture will continue, in nutrition there is no more opportunities, the focus will be on training materials and communication to be implemented by other institutions) - Increase communication and training materials to publicize the project (EaTSANE is already working on this with Mango Tree in the lead) - Increase monitoring and evaluation of project activities (accepted) - Give more ownership to farmers on demonstration plot, make farmers aware that are their field (accepted) - Promote field days (planned at the beginning of season) - Promote a visit to Kapchorwa for Sub-county level and farmers (Nice idea, will be discussed with project team) <p>From Value-chain actors and CHVs:</p> <ul style="list-style-type: none"> - Construct god drying rooms (not possible in the project) - Facilitate trainings; (Dorine ensured that she will do so) - Provide farm inputs (not possible in the project) - Create more Demo plots (needs discussion with all the implementing partners)

	<ul style="list-style-type: none"> - Provide solar dryer for farmers (the idea need to be discussed, but cannot be applied in long term)
<p>Decision-makers on sub-country level</p>	<p>GIVE:</p> <ul style="list-style-type: none"> - Strengthen linkage from Ward, and sub-county to county - Promote locally available vegetables and legumes - Set up seed multiplication plots for Bracharia grass in collaboration with farmers - Introduce irrigation to the villages during dry season - Increase number of demonstration plots to reach more farmers in sub-county - Promote demonstration plots on Conservation Agriculture-based of cropping systems (using EaTSANE as example) - Enhance consumption of nutrient-dense crops (e.g. pigeon peas, cowpeas), making sure that the farmers access knowledge and supporting the markets for nutrient-dense crops <p>TAKE:</p> <p>From Value-chain actors and CHVs:</p> <ul style="list-style-type: none"> - Train farmers new skills on agriculture - Connect farmers to the market - Empower farmers (It is already Sub-county level this role of supporting and empowering farmers, they will keep being committed) - Provide financial support to the farmers <p>From EaTSANE:</p> <ul style="list-style-type: none"> - Continue with demonstration plots (accepted) - Support the implementation of trainings in sub-county (accepted, will work with EaTSANE’s training materials) - Provide access to seeds for promoted crops (e.g. cowpea) (if there is sufficient demand from farmers this could be addressed in a cooperation with agrovets, KALRO and Agricultural Extension Officers)

4.7 Stakeholder collaboration with EaTSANE project on Sub-county level

EaTSANE’s sustainability strategy for capacity building is to produce training materials together with potential implementers, who could provide training to farmers on the long term. Thomas explained that the project needs to have strong partners who could implement such trainings and support communication campaigns to farmers and other stakeholders in the food system. Thus, Thomas asked the workshop participants to identify some relevant organizations that might be capable and interested to collaborate with EaTSANE. The workshop participants mentioned the following organizations:

- KALRO – contacts can be established through EaTSANE project contacts;
- Seed companies – e.g. Kenya Seeds;

- Agriculture Development Services (ADS);
- Organic Agriculture Association - contact can established through EaTSANE project contacts;
- Share messages via Radio – the radio station Emuria FM was mentioned;
- Schools – Contact through Ministry of Education to spread message to schools.

4.8 Identifying action points for policy dialogue and scaling

Thomas explained that in the final phase of EaTSANE, policy dialogue on a national level is planned. The project will organize a workshop and involve relevant stakeholders that have an influence on the project objectives. He invited the workshop participants for a brainstorming on which could be relevant policies on a national level that support or hinder the implementation of the project on a sub-county level. The workshop participants also collected ideas on the most relevant organisations that could support the process of scaling EaTSANE's experiences and results to a wider level. The workshop participants did not identify national policies. The decision-making on the most relevant aspects is organized on a sub-country level. The following persons were mentioned as key stakeholders for policy dialogue and scaling (the Sub-County officers that were present in the workshop can provide contacts to these persons):

- County Director Agriculture;
- County Director Health;
- Ministers on county-level;
- Chief Officers.

4.9 Discussing next steps and closure of workshop

At the end of the workshop, Thomas and Lydia thanked everyone for their presence and for being active participants, contributing to the discussions and supporting the implementation of the EaTSANE project in Teso-South. The Workshop was an important start point of discussion at this stage of the project. The project team will take the inputs into the upcoming mid-term meeting of EaTSANE in June, when all implementing partners will meet.

As a final remark, the Sub-County Officer also thanked the effort of EaTSANE and informed that the county was recently drafting a conservation agriculture policy for Kenya and could interact to EaTSANE in order to develop guidelines to engage in conservation and diversification of agriculture.