



**Nuffic Orange Knowledge Programme TMT+ training
Study visit of trainees from Sudan and South Sudan to Kenya
21-27 November, 2021**



Participants of the field study with members of Prolinnova-Kenya's National Steering Committee after the joint session on 26 November, 2021, in Nairobi, Kenya

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1. Background

Nuffic is currently supporting a tailor-made training (TMT+) through its Orange Knowledge Programme (OKP) for professionals in higher education and other institutions related to Agricultural Research and Development (ARD) in Sudan and South Sudan. This training programme is being conducted by the Royal Tropical Institute (KIT) in Amsterdam on request of partners from Alzaiem Alazhari University in Sudan and the University of Juba in South Sudan. The participants for this training are drawn mainly from universities with a few others engaged in government and non-governmental organisations of ARD. The main objective of this TMT+ is to build the capacity of the professionals in the Farmer-led Innovation Development approach, also referred to as the Local Innovation/Participatory Innovation Development (LI/PID) approach, which puts the small-scale farmer at the centre of the research and development process as dictated by their own aspirations and desires. The approach is being promoted by Prolinnova (www.prolinnova.net), an international network and a community of practice that understands, respects and recognizes the invaluable contribution of small-scale farmers in food and nutrition security. For two decades, Prolinnova has been promoting local innovations of small-scale farmers¹ as a means of supporting sustainable agriculture and sustainable and healthy food for all. The network works through multi-stakeholder country platforms supported by an International Support Team. Prolinnova–Kenya (PK) is one of the multi-stakeholder country platforms that, through applying the innovative approach, are facilitating mutual learning and actions in promoting farmer-led innovation through a PID process. The on-going work of the platform provides a perfect example to highlight the practical application of this approach to learners.

In order to facilitate practical learning, the participants from Sudan and South Sudan visited the Kisumu action learning site in Western Kenya. Through intensive interactions with the different stakeholders engaged in farmer-led innovation development in the action learning site, the participants were provided examples on application of the participatory research approach. This approach is different to conventional research that many of the participants are familiar with as academics and agricultural professionals, and in which they take the lead in all aspects of the research process and not the farmers.

This report therefore contains highlights of the field study visit in Kisumu West and Nyakach Sub-Counties in Kisumu County, including interactions with several local innovators about their innovations, as well as with other stakeholders supporting the innovators, both at the local and national level, through the tiers of Prolinnova-Kenya's multistakeholder governance structure. It also covers a brief about the live radio talk show and television interview, feedback from the field study participants and a brief summary of observations from the facilitators of the visit.

¹ Encompasses crop farmers as well as livestock keepers, pastoralists, fisher people, forest dwellers, artisans and others who depend on natural resources for their livelihoods.

2. Radio talk show

Media is an important tool in information dissemination as it directly creates links between members of the public (community members) and practitioners in diversified fields. The hosts in Kenya used the opportunity to highlight the value of the professional exchange by including one of the study visit participants in a radio talk show. On Monday, 22 November, Makonge Righa (World Neighbors), Mawahib Ahmed (study visit participant from Sudan), Martha Opondo (Kenya Agriculture and Livestock Research Organization, KALRO) and Vincent Mariadho (Prolinnova Kenya Coordinator) were hosted by a vernacular radio station (Nam Lolwe FM) covering the topic “*Strengthening the local innovative capacity of rural farmers for improved food security and livelihoods*”. The radio station has a listener base and coverage of the Luo ethnic group that covers the field study visit areas. The panelists covered the following areas during the one-hour broadcast:

- Brief about Prolinnova Kenya and Prolinnova Sudan
- Prolinnova-Kenya’s LI/PID approach.
- Local innovation and its relationship with food and nutrition security
- How to identify local innovations, examples of local innovations, categories of local innovations
- Who is involved in a process of supporting local innovation development through PID?
- Mainstreaming/integrating gender in PID and giving attention to women innovators
- Anticipated areas of learning by field study participants from Sudan
- Future plans of collaboration between Prolinnova Kenya and Prolinnova Sudan

After the presentations by the panelists, listeners had the opportunity to call in and SMS for questions.

3. Visit to Kisumu West Sub-County

Joint meeting with Local Steering Committee

The Local Steering Committee (LSC) is the local tier of Prolinnova-Kenya’s multi-stakeholder structure to support farmer innovation. It is based at field sites and is involved in local coordination of local innovation processes as well as projects and governance. The membership is composed of farmer innovators (men and women), representatives of local organizations, government institutions of research and development working in the area, as well as members of the local administration. Thus the committees are local multi-stakeholder platforms. On Tuesday, 23 November, the participants had a joint session with the LSC. Under the chairmanship of Jack Onege, the committee enumerated on the composition of the committee, their roles, both at individual and committee levels, their achievements so far and what has kept them active and intact since their inception in 2016.

The chair also briefly touched on the local innovations identified so far, the role of the LSC in their identification and documentation as well as the committee’s capacity support to the innovators. Further, Martha Opondo and Makonge Righa weighed in on the role of the LSC in farmer-led joint

research. The study visit participants took their turn to ask questions about the challenges faced by the LSC in their daily work and how these are addressed. They also got information of the LSC's relationship to the National Steering Committee and how the Prolinnova Kenya structure functions as a whole and supports the country network.

Finally, Mawahib Ahmed and Beatrice Langwa on behalf of the groups from Sudan and South Sudan summarized the session by listing out what they had learnt from the interaction. Mawahib committed to use the same experience to establish local steering committees in Sudan.

Visit to local innovators

After the meeting with the LSC, the participants visited three innovators in their homesteads. Dorice Amoke and her group of 13 women (immortal hen innovation), Eunice Ayieko (energy saving stove) and Maurice Agembo (locally fabricated chicken incubator) hosted the participants for an exclusive discussion and interaction over their respective local innovations.

Immortal hen innovation: This is a social innovation by a group of 12 women and 1 man. The innovation was given the name "immortal hen" since each member of the group was given a hen at the beginning and expected to return one chick back to the group every six months. This has made the group take up poultry farming very seriously and have since grown their flock. As a result of the immortal hen innovation, the group has ventured into joint indigenous vegetable production where they share the benefits equally. They are also now in a joint aquaculture production, rearing mudfish in a pond. The group is locally formulating both poultry and fish feeds from the beans, maize bran and grains for poultry and composting cow dung in the fishpond to facilitate the thriving of earthworms which also serve as the feed for the fish. The cow dung also fertilizes the water thus promoting the growth of grass in the pond, providing additional feed for the fish. Supporting the innovations of this group has helped them to build on their initial ideas and find new and better ways to expand their farming enterprises. This in turn has led to family food and nutrition security and sustainable livelihoods.

Energy saving stove: Eunice Ayieko, like most women in rural farming households, is charged with the responsibility of ensuring that the family gets its timely meals. This however doesn't absolve her from having to juggle other duties such as fetching firewood, washing utensils and laundry and other responsibilities in the households, whilst also sharing the farming work. Her innovation is a light-weight, portable, fuel-efficient and durable stove, locally referred to as a *jiko*. It saves her a lot of time and labour as it has reduced time spent on fetching firewood and costs of charcoal. This stove is cheaper than the ones sold on the market and far more durable. Eunice also earns an additional income by constructing similar stoves in the neighborhood and teaching women's groups how to construct such stoves themselves. As such, she has made a small enterprise through her own innovation that also benefits the community.

Locally fabricated chicken incubator: The innovation is by Maurice Otieno Agembo, who out of a desire to improve his poultry farming whilst incurring lower costs, fabricated his own design of an incubator which also serves as a hatchery. Agembo began with a kerosene-powered incubator but its efficiency was low. The incubator had a capacity of 186 eggs with a hatchability rate/percentage of below 60%. As a result of own experimentation, he upgraded it to an electric-

powered incubator currently with a capacity of 1084 eggs and a hatchability percentage of 80-96%. Asked about moving to solar power, he explained that he has already tried this but encountered a lower hatchability rate, especially during cold weather. He is now in the process of developing a source of energy dubbed “free generator” - free in the sense that it doesn’t use fuel but is ignited/started by a mechanical push by use of hand. Maurice collects eggs from locals at an agreed cost and hatches them - an act which was positively identified by the participants as another social innovation. Agembo also fabricates incubators at a fee of USD 350 for the smallest incubator. For community members who cannot afford these options, he provides services at a small fee - another positive social aspect identified by the participants of the visit. This also demonstrated the a single innovation can lead to a chain of innovations, technical and social, that benefits the entire community.

Throughout the interaction, the participants were very keen in knowing what motivated the respective innovators to embark on such innovations, the steps and improvements they made over time to improve their innovations, the benefits they realized as individuals and as a community. They also added their input, based on their observations and professional expertise, on further aspects that could improve the respective local innovations. It was clear that most innovators were motivated by the need to tackle problems they face in ensuring livelihoods and wellbeing for themselves and their families. This interaction between the visitors and innovators is a perfect example of Prolinnova’s approach of co-creating knowledge and co-learning between smallscale farming communities and ARD professionals under the PID approach².

4. Mini-exhibition and study visit tour in Nyakach Sub-County

On 24 November, the participants made a study trip to Nyakach, to interact with Joe Ouko and his community under the banner of Nyando Basin Lofoda Enterprises. This is a social enterprise that began with the innovation of a locally-formulated dairy goat meal by Joe Ouku and has sparked many more innovations around it that engages and benefits the whole community. The first stopover was made at Harambee center, near a water pan where Joe Ouko and his team are raising seedlings for some of the fodder materials used for the formulation of the Locally Formulated Dairy Goat-Meal (LOFODA-G-Meal).

The group proceeded to Joe Ouko’s farm, a few kilometres from Harambee center, for a brief tour of the garden where Joe and his community members are growing both exotic and natural fodder materials for the LOFODA-G-Meal. The interactive session in the garden yielded more knowledge on the extra benefits the fodder materials. They included integrated pest management through the intercropping of Desmodium with maize and creating a buffer zone of mulato all-round the farm and what the International Center of Insect Physiology and Ecology calls “*Push Pull*”³ technology.

² An approach of ARD that uses local innovation as an entry point for joint research led by the farmers themselves based on their own desires and aspirations.

³ A pest control mechanism where desmodium plants intercropped with pest-targetted crops produces smell that push pest away. On the other hand, the mulato planted all-round the garden produces palatable smell to the pushed pest hence pulling them into it.

Intercropping with Desmodium also helps in improving the soil fertility through the process of nitrogen fixation as it is a leguminous plant.

Mini-exhibition

The study participants were then treated to a mini-exhibition set up by the community to showcase the numerous innovations of different members and how the farmer-led innovation approach has created a very vibrant and resilient community.

LOFODA-G-Meal: This is a dairy goat meal that has been formulated by Joe Ouko, the innovator, using locally available fodder (plant) material, herbs and mineral salts. Joe Ouko described and demonstrated the process of preparing the innovation to the participants. He harvests the fresh fodder material and chops and dries them separately. Thereafter he grinds them separately and mixes the different ingredients together in a given ratio to ensure that all necessary nutrients are available. Some of the fodder materials include *Grewia bicolor* locally known as *Powo*, *Balanitis aegyptiaca* locally known as *Othoo*, Lucerne, Desomodium, and *Mulato*. Interestingly, the participants acknowledged the fodder materials as plants that also grow in their respective countries. Joe went through several cycles of experimentation to come up with the mix of ingredients and the proportions and was supported in this process by ARD stakeholders from Prolinnova-Kenya. Marta Opondo is a researcher from KALRO who supported this process and was also present to provide her inputs to the participants.

The innovation aims at promoting dairy goat farming within the communities in the entire Kisumu region as a viable and sustainable enterprise for the improvement of food and nutrition security, risk management and resilience to climatic shocks, and to support peaceful co-existence among communities. It has proved to be an excellent solution for many of the challenges faced by people in Kisumu County. Through partnership with other ARD stakeholders, Joe has since developed and refined his innovation and is now producing and selling the feed in powder and pellet forms.

During an interaction session over the innovation, Joe took the participants through the whole process of innovation development, right from the own experimentation level to joint experimentation with other ARD stakeholders and finally refining the product. He also narrated the technical and financial assistance he has received from other stakeholders as well as the innovation award (3rd best) received from the National Environment Trust Fund (NET-Fund). This provided the participants a perfect example of a successful participatory innovation development process.

Pumpkin Cake: This is a food processing innovation by a woman in the community. Nereah Odhiambo makes cake from pumpkin. She bakes a dough of boiled pumpkin and wheat flour. The cake is nutritious as it contains relatively more ingredients compared to the ordinary cakes. Pumpkins are also in plenty in the region. When asked by participants what motivated her, she explains that children and even many adults do not like pumpkins. This makes it difficult market for the abundantly available pumpkin hence much wastage. Also, people miss the important nutrients in pumpkins. The innovation therefore aimed at addressing the two issues. With value

addition, more income is fetched as compared to what one would accrue from selling a whole pumpkin.

Vegetable from pawpaw: Jane Jagero, also a member of the Nyando Basin Lofoda Enterprise, cooks raw peeled pawpaw as a vegetable, which is new to people in her community, who usually eat pawpaw as a fruit. She noticed that pawpaws are available year-round, even during droughts, when vegetables are very scarce and costly, and came up with this new way of eating them. The innovation aims at ensuring that families can use pawpaws as a nutritious substitute when other vegetables are scarce.

Meat preservation: Traditionally, meat would be preserved by salting, drying, smoking or just hanging it to drip and dry. Monica and Hellen Auma have found an innovative way to preserve meat, adapted from a traditional practice that has been abandoned by many in the community. The preserved meat is very nutritious as it doesn't lose its nutrients over time, and can be kept for long periods.

Herbal mint: Abdelhakim Abdeen, an innovator from Sudan who was in the group, also showcased one of his innovations. He explained how to concoct the herbal mint which he narrated to be very effective in treating sore throat, colds and flu.

5. Reflection session

At the end of the visits in Kisumu, Jacob Wanyama, the sub-regional coordinator for Prolinnova in Eastern and Southern Africa and Makonge Righa, Program Officer at World Neighbors, facilitated a reflection session on 24 November. The one-and-half hour session aimed at capturing from the participants what they had learnt, experience gained from the interaction with the innovators and other stakeholders as well as gauging to what extent their expectations were met.

Among the points raised were:

- Participants expressed their impressions on the various innovations they had seen and the innovators they interacted with, each giving different accounts on their respective importance on the livelihoods of the innovators, the environment and community as a whole. They found the visit to be very useful for seeing how the farmer-led innovation approach is applied in practice and the benefits it can accrue to farming communities.
- The participants highlighted how one innovation can lead to many others as seen during the visits, thus creating innovative communities.
- They also mentioned important lessons learnt on the governance of the local steering committee, sharing of responsibilities and benefits to the innovators and groups.
- Similar innovations are also found in South Sudan but no one has identified, documented or supported them. With the experience and lesson learnt, the participants from South Sudan hope to document some of these local innovations in their own country.
- Participants appreciated the PID approach as a means of strengthening sustainable livelihoods for smallscale farming communities and expressed commitment to implement the approach in their respective institutions' work.

- The importance of networking was highlighted, especially the support to innovators as in the case of Joe Ouko’s LOFODA-G-Meal innovation.
- The facilitators emphasized the need to focus on innovation as a process of ARD.

6. Joint session with the National Steering Committee

This was the last event, bringing together the participants and the Prolinnova Kenya National Steering Committee (NSC). The session was facilitated by Bell Okello, Chairperson, with Chris Macoloo (NSC member, Regional Director for World Neighbors) giving closing remarks.

The Chairperson provided the following key highlights:

- Brief history of Prolinnova Kenya for purposes of peer learning. He emphasized the importance of self-commitment without expecting financial benefits. The presentation included: projects implemented, the past and current partners/membership, governance of the country network - the NSC and relationship with LSCs and more about the Participatory Innovation Development approach as operationalised by Prolinnova Kenya members.
- The participants from Sudan and South Sudan also gave their feedback from the field - not different from what had been raised during the reflection meeting in Kisumu. The South Sudan participants were committed to starting a Country Platform and requested for the guideline. The Sudan participants committed to strengthen their already existing Country Platform and requested for backstopping.

Chris Macoloo, in his closing remarks, gave a brief on the regionalization process of the Prolinnova network and the importance of exchange and South-South networking between partners in different countries in the region. He also reminded the participants that starting and sustaining the energy and activity of a country platform needs commitment from those involved.

He also encouraged the participants to incorporate the LI/PID approach and principles into their respective institutions, summing up by saying that the “proof of pudding is in the eating”. He cited the example of World Neighbors that has fully institutionalized the LI/PID approach in all its activities.

7. Conclusion and general observations

- The initial motivation of innovators to come up with innovations is, most often, to solve own problems. But the interaction with PID stakeholders brings new dimensions into their research and enables linking with other people to co-generate knowledge to improve their innovations.
- Joint initiatives such as this learning visit are an effective way for regional collaboration –ARD professionals from all the three countries could share and learn from each other and think of ways to continue the collaboration.

- The visit helped to bridge the gap between Sudan and South Sudan – it was an opportunity for professionals to get to know each other, discuss on issues related to the LI/PID approach to ARD, and to make connections for the future.
- Substantial representation from universities in both countries is an opportunity to integrate the LI/PID approach into agricultural teaching.
- The presence of an innovator in the Sudan group was an opportunity for innovator-innovator exchange.
- The need to focus on the process of innovation rather than the products was highlighted throughout the programme by the facilitators.
- The visit helped to deepen participants' understanding of the impact of the PID process. It was noted that in many cases, the original innovation and the process of developing it through PID results in wider impact beyond that of the innovation itself. For example:
 - LOFODA was linked to organic pest management (push and pull) and more innovations such as modifications of the grinder machine
 - Locally fabricated incubator is linked to innovation in egg/chicken value chain
- The visit opened up an opportunity to facilitate the setting-up of a new ProInnova country platform in South Sudan and the possibility of exploring more opportunities for joint initiatives between the three countries that participated in this exchange

Annexes:

Annex 1: Itinerary of field visit

Annex 2: List of participants

Annex 3 – Selected photos of the visit

Tentative itinerary for the Sudan/South Sudan study visit (21-27 November, 2021)

No.	Date (Nov 2021)	Time	Activity	Facilitator/Responsible
1.	Sunday 21		Arrival of Sudan and South Sudan participants in Nairobi	Lucious Achacha (LA) and Vincent Mariadho (VM)
2.	Monday 22	10:00am-	Travel to Kisumu	LA, VM and Makonge Righa (MR)
3.	Tuesday 23	8:00am	Departure to the field	
		9:00am	Joint meeting with Local Steering Committee (LSC)/Local partners	LSC, VM and Martha Opondo (MO)
		11:00am	Visit to innovator (Steve Owako) Innovation: -Improved fish smoker	LSC, VM, MR and MO
		12:00Noon	Visit to innovator (Eunice Ayieko) Innovation: -Energy saving stove	LSC, MR, VM and MO
		1:00pm	Visit to innovator (Dorice Amoke) Innovation: -“Immortal Hen”	LSC, MR, VM and MO
		2:00pm	Lunch	VM, LA
		3:00pm	Visit to innovator (Maurice Agembo) Innovation: - Locally fabricated incubator	LSC, MR, VM and MO
		4:00pm	Back to the hotel	VM
		7:30pm-8:00pm	Joint reflection	MR and Jacob Wanyama (JW)
4.	Wednesday 24	9:00am	Departure to Joe Ouko’s farm (Nyakach)	VM, MR
		10:30am	Interaction with the LOFODA G-Meal and Nyando Basin LOFODA Enterprise members (based on a local innovation)	Joe Ouko VM
		2:00pm	Lunch	VM, LA
		3:00pm	Back to hotel	VM
		7:30pm-8:00pm	Joint reflection	MR, JW
5.	Thursday 25	9:00am	Return to Nairobi	LA, VM and MR
6.	Friday 26	10am	Joint session with Prolinnova Kenya National Steering Committee (NSC)	NSC, VM, LA
7.	Saturday 27		Departure for Khartoum and Juba	LA

List of Participants for Nuffic TMT Field study visit-Kenya

No.	Name	Country	Institutional Affiliation	Email address/contact
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Joint Session with NSC



Women participants at Joe Ouko's farm



Participants with women innovators at Joe Ouko's farm



Mini exhibition of innovative food products



Interaction session at Maurice Agembo's farm about his locally fabricated chicken incubator



Interaction and feedback session at Dorice Amoke's farm over their "Immortal Hen" innovation.