ARUWE AGRO-ECOLOGY CENTRE (DEMONSTRATION FARM) FINAL REPORT

JUNE 2016-AUGUST 2017
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1.1 Summary overview of project progress

In partnership with WEFC, ARUWE has implemented the project “Bridging the knowledge gap for sustainable rural development (Demo Farm)” which begun in June 2016. Overall, the project aim contributes to ARUWEs’ goal of establishing a central place for collective learning where information and knowledge related to effective innovative agricultural practices, energy solutions and sanitation innovations can be shared, preserved and passed onto other sections of the community for learning and adoption. The demonstration center in Kyankwanzi district has been set up to enable farmers and the wider community to easily access comprehensive skills in aspects of energy conservation, ecological friendly technologies, farm planning, seed multiplication, seed security, integration of crop production and livestock rearing. The center also demonstrates and disseminates information related to renewable energy and sanitation technologies such as bamboo biogas plants and eco-san toilets for manure production. Additionally, the center offers training to schools, other organizations, governmental agencies and the private sector. It also promotes innovations, creativity as well as demonstrating technologies and providing learning to the community.

The implementation of this project has been successfully completed although the progress was slow and implementation took longer than what was planned. However, ARUWE is delighted to share the details of the project implementation and outcomes in this report. All the planned activities have been completed but with a deviation on two activities; ARUWE had planned to purchase 3 cows and establish cow folder garden. Instead of 3 cows, ARUWE purchased 2 in-calf cows and this was mainly due to one main reason. The construction of the cow shelter required more funds than what ARUWE had budgeted for. Hence, 2 in-calf cows were purchased compared to the 3 which were planned. Secondly, 5 more local masons have trained in construction compared to 12 who were planned to be trained. The rest of the facilities have been constructed as per the plan and we are happy to report that, they are all functional.

In the implementation of this project, ARUWE has learnt a lot of lessons and experienced challenges which have been shared in this report. ARUWE team has learnt that establishing such a learning center requires time and this needs effectively planning. The fact that, it is center for learning and adaptation, implementers must ensure that quality standards are adhered to and this requires close supervision. Additionally, ARUWE has learnt that a demonstration center requires a full time staff to oversee the functionality of the facilities constructed and ensure that the farm is well maintained and attends to the farm visitors.
The challenge experienced was unavailability of the trained masons for some quarters which slowed construction work at the farm. Nevertheless, 5 new masons have been trained and mentorship ready to execute construction activities independently.
1.2 Summary overview of Project Finances

ARUWE expected to receive EUROS 4,000 equivalent to UGX 14,800,000 as per the budget.

However ARUWE received 3,950 @ 3,900 with an equivalent of 15,405,000. Therefore ARUWE earned a forex gain of UGX 605,000.

All planned activities have been implemented but a few deviations as mentioned above. For example; a 3 cubical cow shelter has been constructed, 2 cows have been procured, several follow up and monitoring visits have been conducted at the farm by staff and management, 10 gasifier stoves have also been procured and a number of trainings have been conducted which have enabled community members to understand how to adapt and sustain the different technologies and practices in their respective homes.

It is also important to mention that ARUWE has experienced a few challenges including; the cow shelter was budgeted at 2,400,000 and the actual cost was UGX 8,430,000. In order to bridge the gap, we used our administration costs and instead of 3 cows we procured 2 cows.

ARUWE expects a final transfer of EUROS 1,492 as final installment to complete the project. ARUWE will use the last transfer to continue with follow ups and pay off the project coordinators salary.

We continue to appreciate WECF for the support to ARUWE and especially on the demonstration farm.
1.3 Detailed project activities

As per the agreement, the following activities were planned:

1. Inception and planning meeting with district and sub-county officials
2. Project launch
3. Training of 12 local masons in construction of recommended facilities
4. Conduct radio talk shows to sensitize the community about new innovation/green technologies
5. Promotion of the green technologies to the population and the district leaders
6. Training for households on efficient water user, sustainable cooking
7. Training for households on adapted organic agriculture
8. Support the introduction of stoves which use biomas for fuel and are smoke free
9. Construct one bamboo biogas plant for demonstration and adoption by the community
10. Construct one ECOSAN toilet for demonstration and adoption by the community
11. Construct one rain water harvesting tank by use of green technology
12. Construct shelter for 3 cows and establish cow forder gardens
13. Support establishment of seed multiplication gardens for new varieties like banana, beans, vegetables and soy (Purchase farm inputs)
14. Purchase 3 cows for demonstrating good management practices and ensure community uptake of the same
15. Monthly follow ups and monitoring

As mentioned prior all the planned activities have been successfully implemented with a deviation in purchase of cows and training of local masons. Below is how the activities have progressed.

1. **Inception and planning meeting with district and sub-county officials**

Project inception and planning meeting with the district and sub-county leadership was the first activity conducted to officially inform the leaders about this innovative project. Specifically, the discussion involved local leaders from the production and agriculture office, the district water engineer, district health and nursing officers; community development officers, Local council 111 and V and the chief executive officer. The deliberation on this project were very fruitful because the leaders were happy to receive such a project aiming at bridging the extension service gaps experienced by the district.
ARUWE received a lot of counsel, advice and implementation guidance which were during project implementation. This meeting equipped the leaders with all the information about this project which has greatly boosted its popularity in the district due to leaders’ recommendations. In fact, leaders have continued to recommend community members to the farm to learn from the practices being exhibited.

ARUWE staff explaining the details of this project to the leaders

2. Project launch

After bringing the leaders on board, ARUWE launched the project at community level with the leaders’ involvement and participation. The launch took place at community level targeting the women farmers and other group members. 3 meetings were conducted in three parishes which enabled more people to receive the message about the demo farm. Exciting to report is that, all participants welcomed this project and looked forward to the implementation of this project. During the launch in Gayaza village, Ms. Birungi Hadijah remarked that; “This project is timely. We the farmers need guidance and advise to effectively participate in meaningful agriculture but these years, the government has not done any extension work to support us. We are delighted to have a demo Centre where we can seek guidance and learn from. This is such an appropriate innovation in our district”
During these presentations, ARUWE distributed some fliers which were designed in the local language to inform the participants about all the facilities that are promoted at the demo center. Participants took more fliers to share and market the project among other community members who did not attend the launch.

ARUWE regional coordinator sensitizing women farmers about the new project during Gayaza Launch

3. Training of 12 local masons in construction of recommended facilities

ARUWE had planned to train 12 new local masons. However, 5 masons have actually been trained by the two skilled masons who were trained during the pilot projects. The training of only 5 masons has been due to the fact that the two senior masons were not fully available during the implementation of this project due to other commitment. Their unavailability denied more masons the opportunity to be trained. The 5 masons trained are now capable and skilled to construct the WASH facilities using the green technologies. They are vibrant and ready to implement individual construction projects.

4. Conduct radio talk shows to sensitize the community about new innovation/green technologies

During the initial stages of the project, ARUWE conducted marketing and sensitization activities including 4 sensitization radio talk shows on Radio Kiboga. Radio Kiboga is the most popular radio for the targeted communities. The 4 radio show were live and interactive. The shows aimed at sensitizing the public about the demo project and its overall objectivities. The radio was selected as a promotion, marketing and sensitization avenue because Kiboga FM has a wide listenership of approximately 100,000 listeners.
The talk shows were conducted at a prime time (7pm-7:30pm) when people listened in most. This was when people had retired from work and were resting in their homes. Since listening to radio is one of the major leisure activities, it was appropriate and relevant. During the show all the promoted practices and facilities where discussed and their benefits. Listeners most especially the men called in; to further understand how the biogas plant works and whether it is safe to use in homes with children. Other callers wanted to understand if it is safe to use ECOSAN refuse as fertilizers and other wanted to know the costs for the different facilities. All listeners concerns were clarified although time was limited since

5. Promotion of the green technologies to the population and the district leaders

To intensify marketing, ARUWE conducted other promotional activities including; door to door visits to educate household members about the green technologies. Marketing of this project was integrated into ARUWE’s other activities in the district where program staff informed community members about green technologies during the different engagements. For example, ARUWE agriculture officer informed women farmers about the green technologies during their agriculture trainings and meetings which has continued to spread this information to a wider community. The credit officers also marketed this project during their engagements with different clients. This also explains why a good number of people have visited the farm.
6. Biogas construction

In an effort to conserve the environment and reduce on deforestation rate in the area, an eco-energy system using the biogas technology has been explored at the farm. This is to inform the community about the new, low cost and environmentally friendly energy system to be adapted in their households. “The green technology”

Community members have been informed that adoption of this technological intervention at household level enhances efficient renewable resource utilization, income improvement through saving on energy expenditures and increases on recycling of farm residues for improved standards of living. The farm has registered a number of visitors include the board of directors from PELUM who visited to learn more about the practices ARUWE is implementing on the farm.

PELUM Uganda is a network of Civil Society Organizations that have chosen to work together to improve the livelihoods of the poor. Since 1995, PELUM Uganda has been working to improve the livelihoods of small-scale farmers and the sustainability of rural communities, through the fostering of ecological land use management. PELUM shares skills and knowledge about good practices and techniques, through a broad network of likeminded organisations; Undertake research and demonstration projects; and advocate for policies that better support small-scale farmers.

From L-R, are PELUM country board team members inspecting a biogas plant at ARUWE farm during the learning visit in July 2017

Additionally, the demo has attracted different people from neighborhood and the different sub-counties in Kyankwanzi. ARUWE is glad to report that, community members visit the farm for fulfill the purpose of establishing the center. To learn and get exposed to the different technologies
and practices exhibited for them to replicate. Most of the visitors are very impressed with the technological options at the farm and they have replicated especially the agriculture practices on their gardens.

7. Eco-san and pour flash toilets construction

Two toilet technologies have been constructed at the farm. The Plour flush which connects to the biogas plant to boost the capacity production for gas and the ECOSAN which will also generate fertilizers for the plantation. The rationale is to demonstrate the cheap and friendly “WASH” technologies that can be adopted by the community. The renewable technology enables the farmer to save on energy expenditures and the ECOSAN toilet provides access to organic manure.

8. Construct one rain water harvesting tank by use of green technology

The rationale for water tank construction at the farm dates back from the need to establish water for; crop farming, animal and poultry production and to cater for simple irrigation at crop plots. Currently, a 6,000lrs water tank has been constructed. As mentioned prior, the capacity of this tank is good enough for households to adopt but not enough to cater for all the farm water needs like irrigation and livestock. ARUWE plans to continue resource mobilizing to either construct a deep well or a ground water tank with more capacity. I.e. 20, 000 liters.
9. Support establishment of seed multiplication gardens for new varieties like banana, beans, vegetables and soy (Purchase farm inputs)

Planting of crops at the farm has mainly been considered for Matoke (banana plantation), vegetables, maize, soybean and bean crops in the last Under this farming typology, different varieties of soybean (Maksoy 2N and Maksoy 3N), maize (Longe 10H and 9H and bean (Chelalang-KK8) crops are demonstrated at the farm to enable the community learn the best agronomic techniques and seed varieties for adoption. ARUWE has also exhibited the recommendation plantation of bananas and kitchen gardens to encourage community members acquires skills to plant vegetables throughout the sessions.

Farming at the farm has been based on organic farming systems using different practices for smart agriculture like soil and water conservation using the various methods like; crop rotation in various plots, organic manure application, intercropping, mulching and terracing. This has been done to
increase on seed availability and sovereignty of legumes and cereals at the farm to enable community access to seed. However during the project implementation, the performance of the garden has been affected by severe droughts especially in season “A” of 2016 which lowered production. ARUWE is trying to mobilize resources to establish and construct simple irrigation schemes at the farm. Nevertheless, the farm has a rain water harvesting jar constructed worth 6,000 liters but this cannot serve all the water needs at the farm. The farm needs a sustaining water source like a deep well so that irrigation can take place. In the second season, some crops were also been attacked by rampant pests. i.e. maize bore and army warm which are becoming so common in most parts of the country.

A banana plantation has also been established at the farm with a focus on both indigenous and improved banana species like “Ndibwabalangira”, “Mbwazirume”, “Kibuzi” and “Musakala” alongside “Kisansa”, and “Mpologoma”-Namulongo and Kawanda breeds. The banana will be integrated with small stock (piggery, poultry and goats plus dairy) for maximum productivity in future. The objectives for establishing a banana plantation is to establish a basis for banana tissue seedlings for the community and to demonstrate the applicability of system integration approach for maximum productivity. Majorly, the objective for establishing a banana plantation were; to establish a basis for banana tissue seedlings for the community, to demonstrate the applicability of system integration approach for maximum productivity and to increase farmers’ access to seed for food security enhancement. ARUWE is happy to report that, many farmers are adopting the recommended practices on their plantation.

10. Construct shelter for 3 cows and establish cow forder gardens

ARUWE has constructed a dairy production unit to show case dairy production potential in the community. The dairy system connects the biogas plant to generate energy, income and manure for use.

The integration of dairy with crops and agro-forestry intends to give feedback to small holder farmers on productive use of resources for increased productivity and profitability of their farms.

Cow shelter constructed for of the cows at the demo center.
11. Purchase 3 cows for demonstrating good management practices and ensure community uptake of the same

As mentioned in the project summary, 2 in-calf cows were purchased compared to the 3 planned. This was due to the fact that the construction of the cow shelter required more funds than what ARUWE had budgeted for. Hence, 2 in-calf cows were purchased compared to the 3 which were planned to cater for shelter. ARUWE also used her administrative costs to top up the construction of a standard cow shelter.

ARUWE team agreed to purchase cows that meet the specifications that can easily adapt to the demo conditions and cows that community members can also manage to cater for if their homes if they opted to adopt this practice. For example, the cows purchased had to be;

- Female Cross breeds animals with Friesian blood between 50-50%
- 200 and above body weight
- In calf of 3 and above month
- 20-24 month old and with well-developed 4 teats
- No detectable anatomical defects
- No abnormal discharges from the orifices
- Smooth hair coat, active and alert without external parasites
13. Support the introduction of stoves which use biomas for fuel and are smoke free

As an environmental conservation and energy saving option, Kyankwanzi community was introduced to stoves which use biomas for fuel and free from smoke. These stoves are made out of 22Ga.galvanized steel metal. They have 2 main basic parts (Combustor-holds fuels and reactors-hold cooking pot). They are 30*30*50 cm and weigh 4.5kg. The stove use between 40-120 minutes of cooking time per load although this depends on different biomass properties. The stoves are designed with 3-wooden handles for stability, portability and safety when cooking. They adjust air duct to control flames and heat by 28-32% for thermal efficiency, and 35-40% for energy efficiency. Community members especially women groups were sensitized about these stoves, how to use them and their advantages including:

- Saving up to 40% on cooking energy costs.
- They actually cook faster and require no tending.
- They are 90% smokeless and save 40+ minutes with each meal.
- The stoves cook with a wide variety of biomass fuels and;
- They make own charcoal that can be used for further cooking of sold off later.

Community members have been encouraged to adopt these stoves sharing with them strong justification for using these stoves. Households were informed that annually one stove can save 650 hours of cooking time, $208 of household income, 40 Ugandan trees and 550 kg of charcoal as ascertained by the supplier. Many women have taken keen interest of these stoves and many are saving to own one.

14. Training households on efficient water use, sustainable cooking and adaptation of organic agriculture

ARUWE team visited over 76 households sensitizing and training them on effective water use, sustainable cooking and benefits of applying organic agriculture. Community members.
Community members were reminded and sensitized about sustainable agriculture and organic farming in general. House hold members learnt that sustainable agriculture is managing, utilizing and conserving agricultural resources so that there is continuous and constant production of resources to satisfy the present and future need. This holistic production and management system
promotes and enhances ecosystem health including biological cycles and soil biological activities. Community members learnt that organic agriculture aims at recycling the resources existing in the farm. Organic agriculture encourages co-operation not competition. It involves the use of local appropriate agricultural resources and it is environmental friendly. Additionally, community members were sensitized about efficient water use particularly households that had acquired the rain water harvesting facilities. These households were also informed about the gasifier stoves and their importance as mentioned above. ARUWE visiting team interested household members visited to visit the farm to learn more about how these facilities work and other practices.

15 Follow up and Monitoring Visits

Since project inception in June 2016, ARUWE management team members have been condition monitoring visits to the farm to assess the progress of activities as per the plan. Management was interested in ensuring that the practices and facilities constructed at the farm met the required standards. Management monitored to assess the functionality of the facilities and during these monitoring visits, management interacted some community members to understand whether the outcomes of the project. During these visits, the management team got an opportunity to interact with community members who were visiting the farm and the neighborhoods. This assured them that this project is appreciated and supported by the targeted beneficiaries which is amazingly. Ms. Natambi Margaret shared her feedback with the management team during one of the monitoring visits and reported “Since the inception of this farm, I have been visiting quite often because I am interested in learning and observing how exactly this facilities are constructed. I had never seen the ECOSAN technology before neither had I seen a pour flush and bio gas plant. So, the farm has exposed me to new technologies which am planning to do. I really want to save and
own a rain water harvesting jar; and when they start constructing it at my home, I will be in position to advise the constructing team when I decide to construct my own rain water harvesting jar even when am not technical person. I have observed and learnt a lot during my regular visits at the demo farm.

Amazingly, most of the community members interviewed during these visits appreciated center as an innovation to sustainable practices. It was noted that a good number of women has adopted the some of the best practices on their gardens. Other community members are saving so that, they can adopt some the technologies according to their household interests. ARUWE team is continuing to conduct monitoring visits to the farm and the nearby community to assess the project impact.