

The Contribution of Agricultural Aid from the USAID Projects on Boosting Farmers' Livelihoods: A Case of Mvomero District, Tanzania

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Abstract - The agricultural sector in Tanzania is one of the important sectors in the country receiving a considerable amount of international aid which is believed to improve the overall wellbeing of farmers and the entire rural society. The main objective of the study was to critically examine the contribution of agricultural aid from the USAID project on boosting farmers' livelihoods. The findings of this study are hoped to form a resource base for sharing experiences, lessons and best practices that will assist different development stakeholders in creating and managing development aids. The field research tools included the semi structured questionnaire (on small scale farmers) and interview guides (on key informants). Analysis of qualitative data was through displays of the respondent's direct responses, and statistical analysis was done using a computerized programme SPSS and more manipulations with the use of Ms Excel in drawing graphs. The findings revealed that there were a number of achievements registered by the USAID agricultural projects on improving the livelihood of small scale farmers. These included training of farmers in improved farming methods, introducing modern farming technologies and improvements in infrastructure which all increased agricultural production and improved the productivity of farmers. Education of farmers on improved farming practices is important in increasing food availability. Improvements in rural infrastructure such as constructing roads eases farmers movements to and fro the markets. Provision of farming equipments enhances farmer's productivity. Agricultural aid has been successful in improving agriculture in the project implementation areas by increasing agricultural production and improving agricultural productivity of farmers.

Keywords - Agricultural Aid, Small Scale Farmers, Mvomero, Tanzania

I. INTRODUCTION

Tanzania is one of the developing countries in Sub-Saharan Africa which receives both bilateral and multilateral aids from different countries, agencies and international multilateral organizations (Cook, 2011; URT, 2005). As Tanzania is still a country whose economy largely depends on the agriculture sector and where majority of the population are living in rural areas and depend on agriculture as a source of livelihood (Mintz-Habib, 2016; URT, 2005), development aids in agriculture constitute a significant share of the development aids flowing into the country from different development partners (Alabi, 2014;

Wolter, 2008;URT, 2005). Agriculture gained recognition on the development agenda by the late 1960's. The provision of resources to the agricultural sector was expected to result in greater outputs and productivity which would boost the economy (Tarp, 2000). Since the sector is believed to have quite a large number of poor people, aid is normally directed to this sector on the premise of increasing the productivity of the small farmers and making the small scale farmers more efficient and thus, improvement of the welfare of the poor (Thorbecke, 2000).

Tanzania has been undergoing different reforms in the social and economic sectors since when it achieved its

independence in 1961. The policy reforms undertaken from 1980s have to a great extent contributed in attracting a considerable amount of foreign resources in terms of Foreign Direct Investment (FDI), Official Development Aid (ODA) and remittances (URT, 2009). These foreign resources have been used to augment the limited domestic saving and bring with them finance, managerial skills, technology, marketing expertise and market link all of which are most needed for the economic development (URT, 2009). These benefits have thus influenced the country to increasingly put in place the environment necessary for attracting aid inflows (URT, 2009). Tanzania has recorded significant improvement in overall macroeconomic performances since the mid-1980s largely on account of sustained policy actions on stabilization and structural adjustment. These policy reforms have initiated mobilization of both domestic and foreign resources. However, poverty levels and overdependence on foreign aid for development remained as challenging as ever (URT, 2009).

With regard to aid effectiveness, at the international level, Tanzania has in many ways been considered as a front-runner in articulating and implementing a process of improved aid delivery and management (URT, 2005). Riddle (2011) noted that the simplicity of the question, 'What do we know about what works in foreign aid?', is unfortunately not matched by the simplicity of a list of effective interventions or the simplicity in the way aid is provided for most countries. Grindle (2010) indicated that such complexities make most aid agencies to focus mostly on reporting the numbers assisted and sometimes going even further claiming achievements for which evidence is wanting rather than educating the public, on whose votes they rely, and deepening public awareness of the complicated nature of development effectiveness (and only one of its constituents, aid effectiveness). Birchler and Michaelowa (2016) noted that aid has contributed to positive achievements over the past decade, but Masino and Niño-Zarazúa (2016) reported that it remains difficult to quantify the impact of aid on development outcomes. The Tanzania Assistance Strategy (TAS), which is the national medium term framework for managing external resources and guiding development cooperation between the government and its development partners, and the aid effectiveness agenda in Tanzania has predated most of the global initiatives and thus provided lessons and experiences to the international community. During the TAS cycle, significant progress were made at the international level in reaching consensus between partner countries and among

donors on setting up practical steps for improving aid effectiveness on the ground. The major agreements included the New Partnership for Africa's Development (NEPAD-2001), the Monterrey Consensus on Financing for Development (2002), the Rome Declaration on Harmonization (2003), the Marrakech Memorandum on Managing for Results (2004), and the Paris Declaration on Aid Effectiveness (2005). The TAS process has been a key instrument in translating these international initiatives at the national level (URT, 2005).

Throughout the TAS cycle, the Tanzanian experience has been shared many times with the international community, among others at the First High Level Forum on Harmonisation in Rome in February 2003 and most recently at the Second High Level Forum on Aid Effectiveness in Paris in March 2005, at which the Paris Declaration on Aid Effectiveness was adopted. In recognition of Tanzania's considerable progress in establishing effective development partnerships and the lessons that it offers to other countries, Tanzania was chosen as the host of the Africa Regional Workshop in preparation of the Paris Forum. At the workshop, held in Dar es Salaam in November 2004, participants from several African countries, bilateral and multilateral donor agencies, and Africa-based civil society organisations commended Tanzania for its achievements and drew extensively in their discussions on the Tanzanian case of enhancing country ownership and aid collaborations, harmonization and alignment (URT, 2005).

Through the development aids in agriculture, the Tanzanian government is continuously making efforts to improve the agricultural sector at all levels, aiming at ensuring food security, raising farmers' income and stimulating the local economy to reduce the growing incidence of poverty in the country. One of such step is the acceptance by the current president John Pombe Magufuli's government to allow the establishment of over 200 manufacturing industries including agro - based industries in Tanzania both medium and small by the Chinese government. This initiative is essentially aimed at creating awareness of wealth creation potentials of agriculture, promote increase in production and agricultural processing, attract youth into the agricultural sector and help raise funds for the development of the agricultural manufacturing sector of Tanzania. For purposes of this study, effectiveness as a key concept will mean 'usefulness', and therefore effectiveness of international aid on agriculture will simply be defined as the usefulness of international aid on agriculture.

II. MATERIALS AND METHODS

The study was conducted at Mvomero District, Morogoro-Tanzania in January 2015. The total sample size was 80 respondents (41 males and 39 females). The study was done in four villages namely; Mkindo, Bugoma, Kirangawageni and Gulioni, where 20 small-scale rice farmers were selected from each village. The methods of data collection included personal interviewing, document review, focus group discussions and observations from which both qualitative and quantitative data was collected. The field research tools included the semi structured questionnaire (on small scale farmers) and interview guides (on key informants). Analysis of qualitative data was through displays of the respondent's direct responses, and statistical analysis was done using a computerized programme SPSS and more manipulations with the use of Ms Excel in drawing graphs.

III. ETHICAL ISSUE

As to the ethical issue the following ethical and moral concerns were addressed; harms and benefits were assessed for the wellbeing of research participants, informed consent were secured (participant understanding of what it means to participate in the study were ensured), privacy and confidentiality were kept (participants' identities and the data were protected).

IV. RESULTS AND DISCUSSION

4.1 Improving Small Scale Rice Farmers Productivity through Appropriate Technologies

The project has shown that small scale rice farmers can increase their crop yields if they use appropriate technologies. The supply of tractors and power tillers by the project greatly reduced farm labour requirements. These appropriate technologies increased the small scale rice farmers crop acreage and also to diversify to other income generating activities such as petty businesses, weaving, making of hand crafts, and so on. Farmers reported that they were able to increase area under rice production using these labour saving technologies and thus increased crop yields. One small scale rice farmer in Mkindo village had this to say;

We have here like two and a half acres of land belonging to our parents. For so long, this land had been redundant because we could only utilize a small proportion of it using our hand hoes. I remember , we could only cultivate 1 acre of rice. But when these people of USAID came and provided us with tractors in the area, we can now

cultivate on all those two and a half acres. You cannot believe that our rice yields have increased from 1058kgs to 3500kgs per acre, even though we apply some fertilizers as well. (Small scale rice farmer, Male, Mkindo Village).

Another small scale rice farmer in Gulioni village had this to add;

I remember my mother used to employ over 20 men to help her during planting, weeding and harvesting on the rice field. During planting especially, she could search for labour force indeed. They could all first assemble at home in the morning before going to the field and I used to wonder how we could prepare enough food for all of them. I was a teenager by then. My mother was producing for both commercial purposes and home consumption because we have a big chunk of land. But it is really surprising how, with the coming of the USAID project, things changed. My mother no longer has to rely on that big number of labour force. Rice production is to a greater extent mechanized. She uses tractors for field clearance; she has weeding machines and rice harvesting machines. We were greatly empowered by the USAID project as a family. In fact we have ample leisure time now and we can engage in some other small business compared to before. Like 10 years ago in my family, farm work was the order of the day. (Small scale rice farmer, Female, Gulioni village)

Table 1 below shows the findings on the distribution of the farm implements used by the small scale rice farmers in Mvomero district.

Table 1: Farm implements used by respondents in Mvomero District

Farm implements used	Frequency	Percentage
Tractor	52	65.00
Power tiller	20	25.00
Hand hoe	8	10.00
Total	80	100.00

Source: Field Survey 2015

Table 1 above reveals that farmers used different agricultural equipments at the time of preparing rice farming. Farmers who used tractors were the majority (65%), and the findings revealed that they were being charged tsh.45,000 per each acre. Farmers who used power tiller were 25% and those equipments were under their possession and hand hoe were 10%. Best performance of farmers was powered by use of tractors or power tillers with cage wheels. Farmers were in - efficient when farming was done using traditional tools like hand hoes. When asked whether the tractor technology was appropriate, all small scale farmers interviewed for this study in Mvomero said yes. Appropriate technology is a small scale technology that is simple enough for people to manage directly on a local level (Adhiambo, 2012). URT (2011) noted that tractors and power tillers have proved to be very handy machines in rice production. Soaking of harrowed plots with water and using equipment / tools to compact and break the remaining soil lumps to form a thick soil paste before seedling transplanting, thorough breaking and mixing of soil in flooded field by machinery to create ideal conditions for paddy seedbed, eases transplanting work, better nutrient and moisture supply (reduces nutrient loss and water percolation losses hence higher yields) (URT 2011). The picture below shows farmers farming using a power tiller.

4.2 Improved Seed Varieties

The findings revealed that with the introduction of improved seed varieties by the project, crop yields increased. The findings revealed that the benefits associated with improved seed varieties attracted the small scale farmers to be interested and enthusiastic about adopting improved seed varieties. Table 2 show a comparison of the number of rice bags obtained by the small scale rice farmers before and after the project implementation per acre.

Table 2: Number of rice bags before and after the project per acre

Number of rice bags before the project	Frequency	Percentage
6 – 10 bags	41	51.25
11 – 15 bags	39	48.75
Total	80	100.00
Number of bags after the project	Frequency	Percentage
26 – 30 bags	4	5

31 – 35 bags	17	21.25
36 – 40 bags	55	68.75
41 – 45 bags	4	5
Total	80	100.00

Source: Field Survey 2015

The small scale rice farmer's said that before the introduction of the new improved seed varieties, they were getting few bags of paddy as proved in Table 2 above. The numbers of rice bags were less because farmers were using local seed varieties which were not productive and did not have a high multiplication rate as compared to the new improved varieties. As shown in Table 2 above, there was an increase of production after the introduction of new improved seed varieties by the project because these new improved seed varieties multiplied more than the local seed varieties and they are disease resistant, hence farmers got more yields. The improved seed varieties introduced by the project included TXD 306 (Salo 5) and Super. The greatest number (81.25%) of small scale rice farmers used TXD 306 (Salo 5) and a few of them (18.75%) used super. This is because TXD 306 (Salo 5) is more marketable and takes 120 days to mature compared to local varieties that take up to 180 days. URT (2011) also confirmed that TXD 306 (Salo 5) has been highly promoted and adopted in irrigation schemes in Tanzania. URT (2011) further affirmed that TXD 306 (Salo 5) was developed to increase rice productivity while partially maintaining local rice aroma and cooking quality, desirable characteristics preferred by most rice consumers in the country.

The findings revealed that small scale farmers were obtaining few bags of rice before the project but with the introduction of new improved seed varieties with the project implementation, the number of rice bags obtained by the farmers increased.

Case Study 1: Small Scale Farmer in Kirangawageni Village

My name is Hassan (pseudonym) and I am one of the trainers of the small scale farmers at the project demonstration site. I am 30 years old, married with two children. I have been farming since I was 4 years because I grew up in an agricultural household. Both my father and mother were farmers. Farming is my main economic activity and it is my livelihood. I depend on farming for most of my family's basic needs. When the USAID project came into

our village, we were first oriented about the project, its goals. I was happy about the project because I knew that we would benefit from it. I was encouraged to actively participate in the project activities because the project goal was to help to improve our agricultural production through different agricultural trainings, providing new seed varieties and introducing new technologies and thus, our improved livelihoods. For the five years of the project implementation, we achieved a number of benefits. For example, I had never used herbicides before for weeding. I was only using hand weeding. Hand weeding is very difficult and ineffective especially for some weeds that are hard and so stubborn. With the trainings received by the project, I was educated of such things like the use of herbicides in weeding. With herbicides, many weeds are effectively controlled over a large area within a comparatively short time. Many farmers now here in Mvomero district are using this advanced techniques of weeding. We were also using local rice seed varieties such as *Rangi mbili*, *Kisegese*, *Shingo ya mwali*, *Moshi wa sigara*, *Tule na bwana*, *Dunduli* and *Mwarabuw* which never produced enough yields. The project provided to us improved seed varieties such as TXD 306 (Salo 5) which could produce more food. The only difference is that the local varieties taste more natural than the improved seed varieties. But for business purposes, we prefer the improved seed varieties because of the high production. When you produce high yields, you are assured of a high profit margin because you are able to tap into a wider market. I was very fortunate to be chosen by the USAID project team as one of the project trainers of the trainees. I got a chance to be retrained in additional agricultural skills and leadership skills. We have demonstrations every weekend at the demonstration site where trainers like me teach and practically show our fellow small scale farmers the ways of planting rice. We have different themes for every demonstration and therefore farmers are able to acquire vast knowledge about rice farming from the different demonstrations. The local authorities normally help us in mobilizing small scale rice farmers for these demonstrations. The USAID project staff are always available to offer us guidance and help when in need although they occasionally come to the village for the past one year since the project ended and has not been renewed yet, although we hear rumours that it will be renewed soon. During the project implementation, they used to do monitoring and support supervision visits on ground to listen to what we are teaching the farmers and how we are carrying out the practical demonstrations at the site. The challenge we have as trainers is that the project never provided us special identification, for example, project shirts

or identity cards so as to be easily recognized in the community. For example, when we try to move in the community to identify farmers who might benefit from our demonstration trainings as well, to spill over the project knowledge to a wider community, some people do not believe in us. They often ask us to prove to them what shows that we are USAID project trainers even though we accept to do these community field visits voluntarily. We rarely receive agricultural extension officers from the district to come and talk to us. That is why we are often sympathetic to help our fellow farmers. Therefore, my appeal to the USAID project team is to reconsider this concern in case the project is renewed. But on the whole, we are very grateful to the USAID project for improving our livelihoods by making us proud farmers embracing agriculture.

The aspects in the case findings above agree with several studies. Ssali (2016) noted the importance of using herbicides in farming such as delay in the growth of weeds. The author explained that the herbicide kills the weeds and by the time the crops emerge from the ground, they do not have any weeds to compete with for nutrients and sunshine. CSGA (2017) clarified on the importance of using improved seeds and listed a number of benefits such as clean seeds, guaranteed quality assurance, traceability and improved traits such as better yield, pest resistance, drought tolerance, herbicide tolerance. Saka and Lawal (2009) also noted that farmers can increase their rice output by increasing the quantity of improved seeds and fertilizers used. Berdegue and Escobar (2001) noted that possession of agricultural knowledge by farmers helps to link them to people and institutions from which they can harness knowledge and information for better farming. Many studies have also shown that monitoring and evaluation of project implementations is important because it provides the only consolidated source of information showcasing project progress; it allows actors to learn from each other's experiences, building on expertise and knowledge; it often generates written reports that contribute to transparency and accountability, and allows for lessons to be shared more easily; it reveals mistakes and offers paths for learning and improvements; it provides a basis for questioning and testing assumptions; it provides a way to assess the crucial link between implementers and beneficiaries on the ground and decision-makers; and it provides a more robust basis for raising funds and influencing policy (Idoro, 2012; Kursave, 2003; Otieno, 2000).

4.3 Infrastructure Development

Since the USAID goal under NAFKA project was to make sure that farmers link their goods to the market, the project constructed a road to facilitate transportation of farmers goods to the market. The small scale rice farmers said that previously they were using a longer route to access the main road which goes straight to the trading center, but USAID under the NAFKA project constructed a shorter route to link them to the main road. USAID built a road of 19.4 Km from Dakawa to Dihombo (in Mkindo village).

The findings revealed that USAID under the NAFKA project also constructed a warehouse so that farmers could preserve their agricultural products after they harvest. This benefited the farmers because they did sell their rice in the month of JANUARY and February where rice demand was very high and price was also higher compared to other months and hence got more incomes.

4.4 Empowering small scale rice farmers through trainings

To unlock the potential of the small scale rice farmers to improve their livelihoods, the project carried out a number of agricultural trainings. The findings revealed that the project trained small scale rice farmer in improved production technologies and agronomic practices such as weed control, seed spacing, timing of planting and harvest, use and importance of appropriate technologies, transplanting, storage, use of fertilizers and so on. The project employed the training of trainers (TOT) model, where it trained a group of farmers, who then train other fellow farmers. However, it also worked closely with other stakeholders who offered trainings to the farmers. The study elaborated on some of these trainings as evidenced below.

4.5 Use of fertilizers

There were five varieties of fertilizers used by farmers in the study area. At least each farmer had a kind of fertilizer they were using when interviewed as shown in Table 3.

Table 3: Fertilizers used by small scale rice farmers

Fertilizers of rice plant	Frequency	Percentage
DAP (1 Sack)	22	27.50
TSP (1 Sack)	18	22.50
Minjingu (Two Sacks)	10	12.50
S A (1 Sack)	17	21.25

CAN (1 Sack)	13	16.25
Total	80	100.00

Source: Field Survey 2015

The small scale rice farmers revealed that the use of fertilizers facilitates early rice plants establishments, good root development, high tiling, increases number of spikelet and influences grain filling (large grain size) hence high quality and high yield. In a focus group discussion with the small scale rice farmers in Mvomero district, they had the following to express;

We were told in the training that combinations of phosphate and nitrogen fertilizers are vital for the growth of rice. Before field crop establishment, it is recommended to apply phosphate fertilizers. When the field water is 3 - 5 cm, application of nitrogen fertilizers is required and this is done twice, that is, at 14 days and 35 days. We largely prefer inorganic fertilizers. Many of us here use Triple Super Phosphate (TSP), Di-Ammonium Phosphate (DAP), Ammonium Sulphate (S.A) and Calcium Ammonium Nitrate (CAN) on our rice fields. Many of the fertilizers we use here in Tanzania are mostly imported except for Minjingu Rock Phosphate (MRP) which is processed and packed in the country by a private company. The use of fertilizers has helped to increase rice production and improve on farmers productivity. (FGD, Small Scale Rice Farmers, Mvomero District)

4.6 Proper Spacing

Small scale farmers reported that they were encouraged to properly space rice. They were told two ways of spacing rice as shown in Table 4.

Table 4: Spacing of rice

Spacing of rice	Frequency	Percentage
20 x 20 cm	30	37.50
25 x 25 cm	50	62.50
Total	80	100.00

Source: Field Survey 2015

Most small scale farmers used the 25 x 25 cm because they said it gives the rice plant enough space for

multiplication. Others commented that the yields are more or less the same for both spacing.

4.7 Weed Control

Small scale farmers reported that they were trained in two types of weed control by the project. Table 5 below shows the weed control methods used by small scale farmers in Mvomero district.

Table 5: Weed Control

Weed Control	Frequency	Percentage
Herbicides	11	13.75
Push weeder	69	86.25
Total	80	100.00

Source: Field Survey 2015

The findings revealed that many small scale rice farmers used the push weeder as opposed to herbicides. They said that the push weeder can only be used in a small area of land and since their rice fields were divided into plots, using the push weeder was very appropriate. They also said that the push weeder is highly effective and can be got at a cheaper price. In a focus group discussion with the small scale rice farmers in Mvomero district, they had the following to elaborate more on weed control;

We were told weeding should be done early enough to avoid loss of yield preferably 2 weeks after transplanting then 3 weeks after the first weeding. We were applying cultural weed control methods in rice farming before the project and this is what is commonly done for most irrigation schemes in the country. These cultural weed control measures include, good land preparation to give rice plants initial weed free environment, mechanical weeding using push weeds between rows and hand pulling between hills and appropriate water levels in rice fields that suppress growth of weeds. These cultural methods are a little bit tiresome compared to the modern methods. Weed control is associated with many advantages. We were told that effective weed control eliminates competition for nutrients and moisture between rice plants and weeds thus increases efficiency of their uptake hence increased yields. Weeding also eliminates host plants to pests and a disease thus promotes growth of healthy plants that give high yields. (FGD, Small Scale Rice Farmers, Mvomero District)

4.8 Straight Row Transplanting

Small scale farmers reported that they were trained in transplanting and especially straight row transplanting. Below is a picture of small scale farmers, extension staff and ministry of agriculture staff during training and support technical visit in Mkindo village. Farmers are being showed how to transplant rice seedlings of 3 leaf stage using transplanting strings at a spacing of 20 cm X 20 cm.

Small scale rice farmers reported that from the trainings received, they were told that transplanting if done with proper spacing, it will result in optimum plant multiplication and yield increase. Transplanting of rice seedlings of 3 leaf stage helps the plant to have proper time on the field and to develop primary roots in the soil.

V. STRATEGIES IN PLACE TO SUSTAIN THE PROJECT'S ACHIEVEMENTS

 **Partnerships:** The project has demonstrated that it takes more than one actor to realize the above project achievements. Partnerships with various stakeholders such as the academia (Sokoine University of Agriculture), Financial institutions, the local authorities, district officials and the ministry of agriculture ensured that the project had a holistic approach. Therefore partners are more likely to build on the project achievements and ensure sustainability.

 **Setting up of the Demonstration Site:** This is an innovative approach that is believed to facilitate awareness of the project activities, thereby spreading their impact way beyond the project area.

 **Farmer trainers of trainees:** These will continue imparting skills to the small scale rice farmers.

 **Project ownership:** Interviews with the direct project beneficiaries (small scale farmers) expressed and exhibited more ownership of the project because of their immediate benefits. Ownership of the project by the project beneficiaries can build their confidence in the project and this has the potential to attract spill over's to other areas.

VI. CONCLUSION

Agricultural aid has been successful in improving agriculture in the project implementation areas by increasing agricultural production and improving agricultural productivity of farmers. The donor funded agricultural projects trained farmers in improved farming methods,

introduced new appropriate technologies that are tailored to the local needs and improved infrastructures in the villages. Tanzania is one of the politically stable countries in Africa and therefore the reason why it attracts a lot of international aid. Given the uncertainty about the effectiveness of International aid by some development practitioners, the question would be under what conditions can aid be effective? Aid is more effective in better governed countries which make intuitive sense.

Agricultural Aid is a precious resource if it helps to solve important problems of farmers. There have been significant improvements in the lives of small scale farmers in Mvomero Districts, Tanzania. The numbers of yields of farmers have increased greatly in the Districts with increased incomes reported. In order to make aid work better, recipients need to show ownership and leadership. The aid recipients should feel that they own the process of the donor project implementations because this is the only way to make their donors accountable. USAID in Mvomero Districts tried to make the small scale farmers and the different partners involved own the project implementations.

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