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Upper River Region Impact Assessment

Rice pump irrigation, horticulture and livestock for livelihood improvement



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Executive summary

The findings from the two rice fields in Dampha Kunda and Taibatou villages show that the profitability and production of dry season irrigated rice production has increased. Ten people were interviewed in Dampha Kunda and nine people were also interviewed in Taibatou village. Findings show that the schemes are able to pay for the investment costs in one production cycle and give two to three times more return on investment costs in one production season, even taking into account depreciation and the cash equivalent of in-kind labour provided by the beneficiaries (average of 11.1 female and 11 male per household). Pump irrigation for dry season rice production proved to be economically viable, sustainable and has the potential to scale up.

Dampha Kunda

There are 142 plots with a size of 22 by 20m² in Dampha Kunda and 130 households are working on these plots. The investment costs are as follows: D142,000 for farmers labour (in kind contribution) to stump, plough, weed, and transplant the entire scheme; inputs provided by WASDA amounts to D163, 230 which includes an irrigation pump (D130, 000), WASDA extension support cost (D26, 230) and cement for canal construction (D7000). Operating cost for each farmer is on average D1704, which when we add to the other costs, amounts to D148, 740 as the total operational cost for this rice scheme. The cash value of 50kg bag of paddy rice is estimated at D580 and on average each plot produced 9.8 bags of paddy rice. In this vein, the total value of one plot amounts to D5684 while that of 142 plots in the rice scheme amounts to D807, 128. Therefore, the sum total for both start-up and operating expenses amounts to D453, 970 which gave a net profit (with total expenditure of D453, 970.00 & gross income of D807, 128.00) of D353, 158 for the initial production cycle.

The rice produced was largely used for home consumption - but this enables them to save money that they would have spent on purchasing rice, which they instead spend on other family needs. The increase in rice production has improved food availability of the beneficiaries for nearly six months, resulting to a reduction in the hungry months from 6 to 0 months. It has also strengthened social cohesion, which has increased chances of sustainability among the farmers. Farmers making an annual contribution of D1000 per farmer in a production cycle and planning to upscale production to two production cycles in a year instead of just one are all signs of sustainability of the initiative.

Taibatou village

There are 90 plots with an average size of 50 by 20m² and 100 farmers are working on these plots. Farmers invested D90, 000 as an estimated labour value (in kind contribution) to stump, plough, weed, and transplant the entire scheme. For a production cycle, each farmer spent on average D2367.74 on operational costs, which gave a total of D112, 309 as an operating expense for the entire rice scheme. A start-up investment cost of D206, 230.00 were provided by WASDA, which includes the cost of an irrigation pump (D130, 000.00), WASDA extension support (D26, 230) and cement for canal construction (D50, 000). The estimated cash value of paddy rice per 50kg bag is D580 and on average each plot produced 12.68 bags of paddy rice. Therefore, the average total cash value of one plot amounts to D7354 and cumulatively that of 90 plots in the rice scheme amounts to D661, 896. In view of this, the sum total for both start-up and operating expenses amounts to D408, 539. This gave a net profit (with total expenditure of D408, 539.00 & gross income of D661, 896.00) of D253, 357.00 for the initial production cycle.

According to the findings, social cohesion among farmers has strengthened as a result of the positive rapport they have in the implementation of the activity, which in addition to an

increase in production and farmers willingness to share operating cost among others, made respondents 88.8% of respondents say that the project activity was sustainable.

The household size of the village by sex is 10.3 female and 11.1 male, which shows that the house size in this village is higher than the national average of 10 to 13 people per household¹.

Jendeh village

The findings revealed that there are 78 women (supported by 10 men) working in Jendeh vegetable garden. It further reveals that each household paid D10 as start-up cost for the construction of their garden fence. WASDA and FAO provided chain-link wire and constructed the wells in the garden. Each household on average invested D183.33 on fertilizer, D41.66 on pesticides, and D475 on seeds as operating expenses, which according to them have increased both productivity and profitability. For example, one of the households got 21 bags of onions and sold 19 bags. It also enabled them to secure sufficient food and has strengthened social cohesion in their community. Reduction in soil fertility, pest and disease incidences, bad road condition, weak marketing Co-operative/Kafo and insufficient water to adequately irrigate their vegetables are areas of concern to them that require redress.

Dasilami

Darsilameh village is another site where vegetable gardening is going on and each house contributed D200 as a start-up cost. While WASDA supported them with chain-link wire, trained them on compost manure making and local pesticides. On average D655 was spent by each household on fertilizer, D125 on pesticides and D490 on seeds. According to them, production and profitability has increased while their soil losing fertility and the pests' incidence are increasing as well. Regarding sustainability, collective contribution through their marketing cooperative is the only sustainable mechanism they are using.

Limbambulu

Finally, the youths of Limbambulu Yammado also received trainings on livestock and agroforestry management from WASDA training centre. Twenty sheep were given to them after training and they made a profit of D17500. However, eight sheep died of an unknown disease. They also benefited from trees they planted for both live fencing and for consumption.

Similarly, the executive committee members, women's groups in Sareh Musa, Chemanbugo, Kerewan Badala, and Koro Jula Kunda etc. were all women kafos that are trained on livestock management, horticulture and forestry management.

¹ National Population Census 2003

Background

Interventions by civil society are essential to help address the chronic food insecurity being experienced in the Sahel region of West Africa, and the Gambia is not an exception. The LEAP project is building and expanding on the activities of defunct URRLIFE and URRLINK projects, in the same target region. Regular monitoring of the project and beneficiaries has led to a call for expansion of the activities of this project. Many have recognised its importance to food security, nutrition and employment opportunities in a region that sees many of its young people leaving for urban areas and beyond, and many of the women left behind struggling to sustain their families. The URRLIFE and URRLINK projects focused on farmer training, off-farm activity training (including tie and die for women; and auto-mechanics for young men), as well as business training and the provision of micro-finance.

The Livelihood Empowerment Agricultural Programme (LEAP) is a project funded by the Big Lottery Fund and other donors including Foundation de France, aimed at improving the living conditions of the poorest of the poor in the remotest areas of the Gambia. The main purpose of this project is to help farmers equip themselves with best practices in horticulture, livestock management, rice cultivation and other skills training. This project also aims to create an enabling environment for farmers to understand the market system in order to maximise their produce and income. It aims to enhance their bargaining power in the local market and provide employment opportunities for the beneficiaries in order to combat poverty, reduce social inequalities and the dependency burden in the targeted region.

The current and past projects have provided training for 120 long term agricultural students and 30 intensive technical agricultural and 'off-farm' students. It also provides training for 4950 farmers (3380 women) through step-down training for women and youth groups.

Concern Universal (CU) works in collaboration with its local partner, the Wuli and Sandu Development Agency (WASDA) in the implementation of this project. Other relevant stakeholders include: the National Association of Credit and Cooperative Unions of the Gambia (NACCUG); local government authorities in URR; women 'kafos' and youth groups.

This impact study aims to help us to understand the challenges and the success of the rice cultivation, horticulture, livestock management and trainings organised by WASDA in URR. It will also help the implementers to address some of the challenges that the project is facing. It will further provide relevant information as to how the project implementation is being carried-out and also evaluate beneficiaries' level of satisfaction of the service they received from WASDA as the main implementing body of this project.

Missions of CU and WASDA

Concern Universal's mission is to work in partnership to challenge poverty and inequality. We support to practical actions that enable people to improve their lives and shape their own futures.

Similarly, WASDA's mission is working in partnership with the poor and marginalized and other stakeholders to eradicate poverty and hunger in the region.

Profiles of villages where the data was collected

WASDA and CU are operating in Wuli, Tumana, and Sandu districts in URR—both in the south and north bank of Basse. Tumana district and Wuli and Sandu are divided by a fresh water river that gets its source from Futa Jalon. These are agrarian communities. The predominant ethnic groups in this region are: Mandinka, Fula, Sarahule and Jahanke people. The profiles of villages that are covered during the impact assessments are outlined below.

Methodology

Tools used

A checklist of questions was used as interview guides for a discussion with respondents who are engaging in rice production, horticulture, livestock management and with 'off-farm' and 'on-farm' long term students. Focus group discussion was also used with women, youth groups and the WASDA Executive committee. It was done in such way that women and men are first separated so that each group discuss independently of each other, after which they are joined together to further discuss the same issues they have been discussing in their respective sub-groups. The purpose of splitting them into gender focus discussion groups is to get the opinions of both men and women. It is useful in providing relevant and adequate information needed for this impact study because it is participatory. Observation was another method used in collecting the data.

Sampling

Communities that benefited from the project/s and the specific intervention sites such as the rice field and vegetable garden were visited.

The table on page 8 shows the total number of beneficiaries of WASDA/CU and the percentage sampled for the impact study.

A sample size of 10 people, which represent 13% of the total number of dry season rice growers in Dampha kunda and 11.11% of those in Taibatou served as respondents. Focus group discussions were conducted among five women's groups, namely: Sareh Musa, Chemanbugo, Kerewan Badala, Kanapeh and Koro Jula Kunda. There are 10 men and 65 women in the Sareh Musa women's group. A sample size of eight respondents was engaged in the focus group and all of them are women. This figure represents 6.08% of the total number of people in the Sareh Musa women's group. 285 (278 female & 7 male) people are in Chemanbugo women's group and 13.8% took part in the focus group discussion. Six respondents out of the total number of 75 people of Kerewan Badala took part in focus group discussion and 2 people among the 6 respondents are male and 4 are female. This is 4.5% of the total number of people in this group. There are a total number of 50 people (30 female & 20 male) in the Kanapeh women's group and 6 people (2 male and 4 female) took part in the focus group discussion, representing 3% of the total number of people in the group. 76 people are in Koro Jula Kunda women's group and 8 respondents (2 male and 6 female) from this women's group participated in focus group discussion, representing 6.08% of the total number of people in this group. 12 members out of 13 WASDA Executive committee members were interviewed. While 12 people (8.28%) out of 69 members of Limbambulu Yammado group took part in the focus group discussion as well.

Research Limitation

The tools used in data collection involved focus group discussion: using checklists, individual interviews and observation. A reasonable sample size was selected among each category of people mentioned above. It was difficult to meet the respondents at their homes because most of them at this time of year (September/October) are busy on their farms. They were also in a haste to answer questions in order to continue with their work. Some of them had a wrong perception of the study leading to some of them exaggerating their conditions with the hope that it would create more opportunities for them. The intervention sites are far from each other and roads are in terrible condition, which affected movement during data collection. The inability of some of informants to give accurate (based on recall) information regarding their income and expenses is among the constraints encountered during data collection since most of them don't keep records of it.

Detailed Results

Irrigated rice fields

The findings from the two irrigated rice fields visited and one detailed case study are presented in this section under the following headings

- The start-up cost of rice irrigation in an area (which includes the cost of pumping machine, canals and physical labour)
- Ongoing operational cost (fertilizer, seeds, pesticides etc.)
- The amount of rice produced per plot and its estimated cash value
- Number of household members partaking in rice production and what they use it for – consumption or selling
- The social impact of rice production
- Environmental impact of rice production
- Sustainability

Dampha Kunda village

The start-up cost of rice irrigation scheme in Dampha Kunda

This section covers the start-up cost for the rice irrigation, which involves the cost of the pumping machine, other equipment and extension support provided by WASDA. Dampha Kunda has 142 plots of land under irrigation and each plot size is 22 by 20m². There are 130 households (1040 people, with 52% (541) being female) working in these plots.

The investment cost includes both start-up and operational costs which are summarised as follows:

• Farmers cash operational expenses:	D148, 740
• Farmers in kind investment:	D142, 000
• Project start-up investment:	D163, 230
Total (cash and in-kind)	D453, 970

The tables below discuss the details:

Table 1: Start-up costs

Start-up Item	Cost (dalasi)
Cement (20 Bags)	7000
Pumping Machine	130,000
Ploughing, stumping, weeding and transplanting cost D100/day if one is to pay for labour. However, it is important to mention that the beneficiaries provided labour. Hence they would have paid 10 man-days to cultivate a plot which is calculated as follows: D100/man day x 10 days x 142 plots (=D142, 000).	142,000
Sub Total	D279, 000
WASDA Extension Service cost to one site/growing season	
Training for 6 farmers x 12 days	18218
Extension worker	3545
Extension Supervisor	2218
PSO monitoring visit	2249
Sub Total	26230
Grand Total	D305, 230

Discussions

All the ten respondents in this village confirmed each plot owner paid a contribution of D54, which add up to D7000, which they used to purchase cement to construct the canal for the easy flow of water from the river to the rice fields. The pumping machine that pumps water from the river to their rice field costs D130, 000, and is provided to them by WASDA. They further said that each of the plot owners spent seven days to remove stumps and plough their plots at the initial phase of cultivating the dry season irrigated rice under this project.

Ongoing operational cost (fertilizer, seeds, pesticides etc)

This section provides detailed information on the amount of resources that beneficiaries in Dampha Kunda spent per rice production season which include the following: fertilizer, seeds, diesel, maintenance and pesticides.

Table 2: Irrigated Rice production expenses per season:

Item	Average Per farmer	Total	NOTE
Fertiliser	D606.50	D606.50	
Seed	D97.50	D12, 675	Four respondents received 3 cups of seeds from WASDA, another 4 respondents also got 4 cups of seeds from WASDA, and 2 respondents also got seeds from their seeds banks.
Fuel and maintenance	D1000	D130, 000	
TOTAL	D1704	D148, 740	

None of the households are using paid labour and in the event that hired labour is used it costs approximately D100/man day and given 10 days to cultivate one plot, will amount to D1000 per plot.

Discussion

All the respondents confirmed that WASDA trained them on how to make organic pesticides from the leaves of trees that are very effective and harmless to both people and the

environment. This pesticide is used to protect their crops from pests and diseases. The table above further revealed that each of the plot owner paid D1000 for fuel and maintenance of the pumping machine, D606 for the fertiliser, D97 for seeds and D54 for canal construction which gave a total of D1704 per plot owner and sum up to D155, 740 for the entire scheme.

Dry season irrigated rice production income

Table 3: Number of household respondents, sex, number of plots, number of 50kg paddy bags harvested, cost per bag and total harvest cost.

Respondents	Male/female	No. of plots per person	No. of bags of paddy rice produce	Cost per bag of paddy Dalasi	The value of bags of rice in dalasi ²
H1	M	1	3	580	1,740
H 2	M	1	6	580	3,480
H 3	M	1	10	580	5,800
H 4	M	3	19	580	11,020
H 5	F	1	6	580	3,480
H 6	M	1	8	580	4,640
H 7	M	1	9	580	5,220
H 8	F	2	25	580	14,500
H 9	M	2	2	580	1,160
H 10	F	1	10	580	5,800
Total number of household interview is 10			Average 9.8		Total=56840, Average D5684=56.84%

Discussions

The plot size is 22 by 20m² and all the plots are of equal size. One respondent (10%) said that he got three plots; two (20%) have two plots and the rest of respondents (70%) have one plot. The difference in the number of plots an individual owns depends on the ability to pay an extra cost for it. This makes it possible for others to have two or three plots since there are 142 plots against 130 households. According to the seven women and a male interviewed (with an average age of 47), on average each of them got 9.8 bags of paddy rice (unmilled rice). The value of each bag of paddy rice is D580 which on average amounts to D5,684 per plot. Therefore, for 142 plots, the value for the total produce stood at D835,548 while total expenditure (cash and in-kind) amounts D453, 970. This gave a net margin of D381,714. In view of this, the produce for the Dampha Kunda rice scheme has paid for what is spent on operational, start-up and in kind costs in the first production season.

It is important to note that the rice produced is only used for consumption. They use rice for both lunch and dinner and sometimes the remaining rice from these meals is also used for breakfasts. All the respondents said that their produce usually serves them for six months or more which made it possible to reduce their hungry months from 6 to 0 month. In addition, they also used their rice for social and religious festivals and sometimes it is exchanged for other food items as well. The respondent further revealed that dry season rice production makes it easier for them to provide enough food for their children. The money they used before to buy rice during the hungry months is now spent on their children's school fees, medical bills for themselves and their children and it also enables them to pay their Kafo/group contributions regularly.

² The value of a bag of paddy rice is D580

Summary

The gross value of produce per plot is 5,800, minus expenses for operation of D1704 and start-up cost of D692 per plot, giving a net produce value of D3404 per plot per season on average.



Photo: a household head beneficiary from Dampha Kunda standing by some of her produce

Sixty (60) of the farmers suggested the need for the expansion of their plot size because they believe that it will help them to maximise their production in order to sell the surplus to earn income and will also help many people in the village that are not fortunate enough to be part of this project since there would be extra land for expansion.

Environmental Challenge

All the respondents identified the need to put plans in place to address the flooding of the rice field during the rains when the River Gambia burst its banks, since in such a situation access to the rice field becomes difficult and the entire rice field becomes submerged with floodwater causing total cessation of rice production.

Social and environmental impact of irrigated rice field

All the respondents confirmed that they have benefited from dry season rice production.

Table 4: Feedback from respondents on the main benefits

Outcome of the rice irrigation	Tally	%
Increased production	8	80%
Profitability of the scheme	9	90%
Sufficient food for nearly six months	10	100%
Strengthened social cohesion and social activities	10	100%
Reduction in soil fertility	2	20%
Good soil fertility	8	80%
Destruction by pests	10	100%
Sustainability	8	80%

Discussions

Below are detailed explanations of the issues discussed in the table above.

Increased production

80% of the respondents when asked whether their production increased responded positively that they have experienced increase in their rice produce, which enabled them to

have sufficient food for their families for nearly six months. 20% of the respondents said that productivity does not increase because of reduction in soil fertility.

Profitability of the scheme

When asked about the profitability of this rice scheme, 90% of the respondents said that it is profitable because the amount of rice they got is far more than what they had before this project. They further revealed that they are not worried about food now and can now use their money to provide other basic necessities to their children such as clothing, school fees and learning materials. Unlike now, before they usually exchanged rice for other food crops from their neighbours. However, 10% of the respondents are sceptical about the profitability of this project considering the amount of money they spent on fuel to power the pumping machine.

Sufficient food for nearly six months

All the respondents said that the produce they gain from this irrigated rice fields serves their families' food needs for nearly six months. When asked how that helps them, they responded that their families are happy and it has eased their food insecurity. This has made them extend a helping hand to some of their neighbours and relatives by giving them rice. They further revealed that the income they save from buying rice is used to pay for their other family needs.

Strengthening social cohesion

All the respondents said that rice cultivation has enhanced social cohesion and also served as a social safety net during the hungry months. Since it encouraged them to form themselves into an established group/Kafo and make contributions occasionally to support each other at times of need. For example, their Kafo helps anyone who is sick and cannot weed, complete or transplant their rice fields. Furthermore, they give rice to each other during social and religious events.

Reduction in soil fertility

Ten percent (10%) of the respondents said that their soil fertility has reduced because of the continuous cultivation of rice, since they alleged that artificial fertilizers cannot sustain or provide adequate nutrient for their crops.

Good soil fertility

Eighty percent (80%) of the respondents said that their soil nutrients are sufficient to support rice production. They also said that artificial and organic fertilizers combined helped them to replenish the soil nutrients, which has increased their productivity.

Destruction by pests

When asked, all the responded said that pests destroy their rice since their rice is always affected with a kind of disease that makes the rice crop become dark and have dry leaves. Spraying with pesticides cannot eradicate it and they usually uproot infected crops before it spreads to the whole rice field.

Sustainability

Eighty percent (80%) of the respondents said that they will be able to sustain dry season rice production because WASDA trained them in new techniques of rice cultivation, compost making and also because they are responsible of purchasing fuel for pumping machines and their maintenance, which before was done by the Department of agriculture. The last twenty percent (20%) are sceptical about the sustainability of this rice project and based their arguments on the rising cost of fuel.

Number of female and male in each respondent household

Table 5: Summary of the total number of people in each respondent household that benefited directly or indirectly from this irrigated rice field.

Respondents per household	Female	Male
H 1	13	16
H 2	5	7
H 3	5	10
H 4	7	13
H 5	17	18
H 6	8	5
H 7	15	11
H 8	17	8
H 9	9	10
H 10	15	12
Total number of household interview is 10	Average Nr. of male per household: 11.1	Average Nr. of female per 11

Discussion

These are the number of people in each household that have directly benefited from the rice produced from the rice field. When asked, each respondent gave the numbers of men and women in their household and also said who in their household helps them during rice cultivation. They also revealed that the money that they would have used to purchase rice is now used to buy uniforms, provide school fees, clothing and other nutritional food for their family. There is a total number of 111 women and 110 men in the ten respondent households with an average of 11.1 female and 11 male per household. All of these people work on the rice field. However, 80% of the respondents claimed that women usually take a greater share of produce, which they use for their social activities like naming ceremonies among others.

Case study: Tamai Jabbi of Taibatou village

Mr. Tamai Jabbi is 42 years old man who lives with his family in Wuli west at Taibatou village. He has six men and three women in his household. He and his family usually have a shortage of food in their household for a couple of months but this project enable him to have minimum of fifty-five (55) bags of paddy rice in each harvest. This family doesn't only depend on rain for farming, rather they cultivate rice all year round because of the support of the pumping machine the village got from WASDA. This has enhanced the living standards of the family. As a result, Tamai is able to send his children to school and provide learning materials and proper health care for the family. He doesn't sell the produce but the money that he should use to buy rice for his family is diverted to provide education and health care for his family and relatives as well. Tamai uses this rice produce in social ceremonies like naming, circumcision, marriage and so on. This rice production also strengthens his social ties especially at the group level where he paid his dues at the right time. He is hoping for his three plots of rice field to be expanded in order to have surplus to sell to earn an income.



Photo: Tamai's rice produce from the last harvest.

The crop failure that occurred last year as a result of shortage of rain affected many people in this community. However, Tamai was not affected as he exchanged bags of rice with other goods in order to ensure that his family had enough food. He was even helping his neighbours during this hard time. The produce of multiple bags of paddy rice he gained from his rice field has motivated many people in his community to engage in dry season irrigated rice production which is supported by WASDA.

Taibatou village

The start-up cost of rice irrigation area, which includes the cost of the pumping machine, canals and the physical labour in Taibatou village

Investment costs include start-up and operational costs, which are summarised as follows:

- | | |
|--------------------------------------|---------------------|
| • Farmers cash operational expenses: | D112, 309.93 |
| • Farmers in kind investment: | D90, 000.00 |
| • Project start-up investment: | D206, 230.00 |
| Total (cash and in-kind) | D408, 539.93 |

Table 6: Start-up costs.

Start-up Items	Cost (Dalasi)
Pumping Machine	D130, 000
Canal construction	D50, 000
Ploughing, stumping, weeding and transplanting cost D100/day - if one is to pay for labour. However, it is important to mention that the beneficiaries provided labour. Hence they would have paid 10 man-days to cultivate a plot which is calculated as follows: D100/man day x 10 days x 90 plots (=D90, 000).	D90, 000
Total	D270, 000
WASDA Extension Service cost to one site/growing season	
Training for 6 farmers x 12 days	18218
Extension worker	3545
Extension Supervisor	2218
PSO monitoring visit	2249
Sub Total	26230
Grand Total	D305, 230

Discussions

There are 90 plots under dry season rice irrigation and each plot's size is 50 by 20m. One hundred (100) people are working in the rice field. When the respondents were asked the amount of money they spent at the beginning of the rice cultivation, they responded swiftly that WASDA purchased the pumping machine for them at a price of D130, 000 and also paid for the construction of the canals which in addition to their own contribution of D5000 cost D50, 000. They also responded saying they used their own physical labour to carry out clearing, ploughing and stumping which cost approximately D100/day and if they are to hire someone for 90 plots will cost them D90,000. WASDA, through the project, paid for the pumping machine (D130,000). In addition extension support from WASDA cost on average D26, 230 as detailed in the table above.

Operational cost (fertilizer, seeds, pesticides etc)

This section provides detail information on the average amount of money each respondent in Taibatou spent on fertilizer, seeds and pesticides in last season.

Table 7: Costs of fertilizers, seeds, fuel for pumping machine and the costs of farmers' labour per farmer are shown in the table below.

Item	Average Per farmer	Total	Note
Fertiliser	D1333.33	D11, 999.97	
Seed	D34.44	D309.96	Only two farmer actually paid cash for seeds – others used own seeds from previous season or from WASDA
Fuel for pumping water	D1000	D100,000	
TOTAL	D2, 367.74	D112, 309.93	

Discussion

When the respondents were asked whether they bought seeds, they responded no since they used their own seeds. They also used local pesticide, which is made out of tree leaves to control pests. For the up keep of the pumping machine, they make an annual contribution of D1000 each to pay for fuel and maintenance cost. Each rice grower spent on average of

D1333.33 on fertilizer, D34.44 on seeds. Therefore, each of them spent on average of D2, 367.74 on operational costs as detailed in the table above.

Table 8: Number of households interviewed, number of plots, bags of paddy rice harvested and value in dalasi.

Nr. Respondents Households	No. of plots	No. of bags of paddy rice produce per plot	The value of bags of rice in Dalasi per plot
H 1	4	55	31,900
H 2	3	37	21,460
H 3	4	43	24,940
H 4	2	30	17,400
H 5	2	31	17,980
H 6	2	13	7,540
H 7	2	24	13,920
H 8	1	19	11,020
H 9	1	14	8120
Totals	21	266	154, 280
Total averages		12.67	7346.67

Discussion

When the respondents were asked about the number of plots they have, they responded with 90 plots, with 100 people are working on them. All the plots are of equal size of 50 by 20m. However, some of them got more than two plots. Each plot produced on average 29.5 bags of paddy rice which when valued, on average amounts to D17, 142. Therefore, the total produce value from the 21 plots amounts to D17142.22 but they only use it for consumption.



Photo: bags of rice harvested by one household at Taibatou

Social and environmental impact of irrigated rice field

Table 9: Summary of some of the social and environmental impacts that the project brought to the beneficiaries at Taibatou village.

Outcome of the rice irrigation	Tally	%
Increased production	9	100%
Profitability of the scheme	9	100%
Sufficient food for nearly eight months	6	66.6%
Strengthened social cohesion and social activities	9	100%
Reduction in soil fertility	9	100%
Destruction by pests	5	55.5%
Sustainability	8	88.8%

Discussions

Increased production

All the respondents from Taibatou village revealed that their rice production has increased when compared to before. However, there is no record of the rate at which it increases and they only said that they have enough rice now. When asked what resulted in an increase in production, they associated it with the training they received from WASDA on how to make compost manure, local pesticides and how to go about improved rice agronomy. They also said that without the pumping machine, which WASDA gave them, they would not be able to grow rice during dry season.

Profitability of the scheme

When asked about the profitability of their irrigated rice scheme, they unanimously responded that they do not sell rice but they only use it for consumption. They said that it is profitable because it provides enough food for them and they use their money that they previously spent on rice to provide other needs for their family.

Sufficient food for nearly eight months

When asked about the duration the rice produce serves them, 66.6% of the respondents said that it serves them for nearly eight months. However, the rest said that it does not last for eight months due to the number of people in their household and social activities such as naming ceremonies where they use their rice for food during these events. In addition, it wasn't only their immediately families consuming all that they produced but also their neighbours and relatives residing in the urban areas.

Strengthened social cohesion and social activities

All the respondents said that dry season rice production has strengthened social cohesion because they help each other in their farms and support each other with rice in the event of religious and social events. They also asserted that they usually exchange their rice for other goods with their neighbours.

Reduction in soil fertility

All the respondents said that in the soil on which they grow rice fertility has decreased because of their continuous cultivation of the scheme and because fertilizer is expensive and they cannot purchase enough for their rice fields. However, one contributing factor to the low fertility of their soils is their heavy dependence on artificial fertilizer in the past.

Destruction by pests

Fifty-five percent (55%) of the respondents said that pests destroy their rice and this reduces their yields. However, they said that they usually uproot those plants that are infected by pests and diseases in order to avoid transfer to other crops.

Sustainability

Regarding sustainability, they said will be able to sustain their rice scheme when WASDA stop their usual support because of the empowerment and relevant training they received from WASDA. Also, they will now be able to sustain the fuel requirements and maintenance of the pumping machine on their own now because they make collective contributions.

Number of female and male in each respondent household

Table 10: Summary of total number of people in each respondent household that benefit directly or indirectly from this dry season irrigated rice field, showing sex category of respondents and the number of male and female in each household.

Names of respondents	No. Female in each household	No. of men in each household	Total No. of people in each household
Tamai Jabbi	3	6	9
Mbenbanding Jawneh	10	9	19
Kebba Jaiteh	8	6	14
Aminata Dampha	11	12	23
Muhammed Drammeh	16	10	26
Jula Keita	17	15	32
Mbeikinding Sillah	13	7	20
Sarjo Jawneh	13	8	21
Majula Drammeh	6	10	16
Averages:	10.3	11.1	

Discussions

The table above show the number of women and men in each of the respondents household and all of them participate in rice cultivation and depend on the rice produced for their daily meals. When the respondents were asked whether their rice produce supported them for a year, they responded that with the growing number of people in their households, it serves them for nearly eight months. An average of 20 people is in each household, 10.3 female and 11.1 male.

Jendeh Vegetable Garden

Jendeh is a small hamlet and has six compounds and six households. The village has a total population of 549 people, comprising of Mandinkas and Fulas who depend on field crops farming and gardening as their main livelihoods. There are 78 women and 10 men working in the vegetable garden.

The start-up cost of Jendeh women vegetable garden

Table 11: Number of respondents, sex and start-up cost which includes cost of fencing, digging wells, ploughing, weeding etc.

Respondents	Male/female	Cost of fencing
H 1	F	Each group member paid D10 as a collective contribution which sum up to D880 and used this in fencing the garden. WASDA and FAO also provided them with chain-link wire and wells.
H 2	F	
H 3	F	

Discussions

When they were asked what type of support they got in the process of establishing their garden, they responded saying they received seeds, wells, chain-link and wells from both WASDA and FAO. In addition to these, they used their physical labour to erect the fence, do weeding and make beds which they received training from WASDA for. The result of the focus group discussion with 10 women from this garden revealed they make each individual member of the group contribute the same amount towards the establishment of the garden

as started above. Individual interviews were not carried out since they were a group when they were working in their garden.

Operational cost (fertilizer, seeds, pesticides etc) and the quantity of vegetables produced and monetary value

The operational cost of Jendeh women vegetable garden includes fertilizers, pesticides and seeds, which were supplied to them by WASDA.

Table 12: Quantity of vegetables produced and the amount of income it generated from the sales of their surplus vegetable produce during the course of last season harvest per household interviewed.

Respondents per household	Fertilizer	Pesticides	Seeds	Qty of produce	Value in Dalasi
H 1	D375	D375	D75	21 bags of onion and 19 sold.	D8550
H 2	D100	D50	D1200	-	D1200
H 3	D75	-	D150	-	D150
Totals	D550	D425	D1425		D9900
Total averages	D183.33	D41.66	D475		D3300

Discussions

The table above shows operational cost incurred for each household respondent from Jendeh vegetable garden, which includes seeds, pesticides and fertilizer. The quantity of produce and the value in dalasi are also included in the table. On average an amount of D183.33 was spent by each of the households on fertilizer, D141.6 on pesticides and D475 on seeds last season. It is also evident from the table that the expenditure on seeds is more when compared to that of fertilizer and pesticides. The reason attributed to this is the impact of the training they received from WASDA on how to make effective local fertilizer from compost manure, thus reducing their dependence on artificial fertilizer and pesticides. According to them, WASDA also gives seeds to them periodically. Information from the three household respondents demonstrates that two of the respondents cannot remember the quantity of their produce, but they estimated that they got D150 and D1200 from the sale of their surplus produce since they also consumed part of their produce with their family. The table further revealed that in total an amount of D2400 was spent by the respondents on fertilizer, pesticides and seeds. In addition, on average each of them spent D699.99 as an operational cost to earn a gross income of D3300 from their last harvest. This demonstrated that gardening is a rewarding venture for them since they gained a net profit D2600.01 from their last harvest. From the figures presented in table above, expenditure on the seeds far outweighs fertilizer and pesticides. Therefore, there is need to sensitize and train vegetable gardeners in this community on how to preserve and use their local seeds. They should be encouraged to use organic more and reduce heavy dependency on artificial fertilizers which has a negative impact on the soil.

Table 13: Varieties of vegetable grown

Vegetable	Tally	%
Bitter tomato	2	66.6%
Green beans	2	66.6%
Hot pepper	1	33.3%
Okra	3	100%
Onion	2	66.6%
Pumpkin	1	33.3%



Photo: Jendeh vegetable garden

Discussions

The above table shows the varieties of vegetables grown in Jendeh vegetable garden. Okra is grown by all and scored (100%) followed by bitter tomato, green beans and onions and each scored (66.6%). Pumpkin and hot pepper scored (33.3%) because few people grow it.

Social and environmental impact of vegetable garden in Jendeh village

Table 14: Summary of social and environmental impact the vegetable gardening has brought to the beneficiaries of Jendeh vegetable garden.

Outcome	Tally	%
Increased production	10	100%
Profitability of the scheme	10	100%
Sufficient food throughout the year	6	66.6%
Strengthened social cohesion and social activities	10	100%
Reduction in soil fertility	6	60%
Destruction by pests	5	50%
Sustainability	8	80%

Increased production

The above table shows the social and environmental impact of vegetable gardening on Jendeh community. Ten (10%) of the respondents in a focus group said that their produce increases after the trainings and support they received from WASDA, don't buy vegetables during the vegetable seasons and use cash saved from buying vegetables to pay for other household needs.

Profitability of the scheme

All the respondents agreed that vegetable production is profitable because they grow different crops such as bitter tomato, okra, onion, green beans, hot pepper and beans. The training they received from WASDA have enabled them to form marketing kafos and grow different crops in order to avoid market gluts. This training helps them because before they used to earn less from their crops because all of them grow the same crops but now they grow different crops that increase their income from the sales of their surplus produce. Approximated they earn an average income of D6, 000 each harvest per person. Therefore, if they have two harvests in a season, then they will earn nearly D12, 000 each.

Strengthened social cohesion and social activities

The respondents also said that the garden has strengthened their social relationship and cooperation at a group level, since it enables them to provide social safety nets to each other in times of difficulties. All the respondents said that vegetable gardening helps them to pay their Kafo dues regularly and they also exchange it for other goods from their neighbours. They also said that they usually make a contribution at the end of every season in order to maintain their wells and fence.

Sufficient food throughout the year

All the respondents said that it helps them to sustain themselves and their families throughout the year. They argued that the money they usually gain from vegetable gardening plus the rice produce from their field and rice crops enables them to sustain food for their families all year around.

Reduction in soil fertility

60% of the respondents said that the soil is losing its fertility and artificial fertilizer is expensive and so they find it difficult to purchase enough of it. When asked about the causes of reduction of soil fertility, they responded that they continuously grow crops on it and the period following is too short for it to regain its required nutrients.

Destruction by pests

Fifty percent (50%) of the respondents also said that pests usually destroy a significant amount of their vegetable produce. They said that they usually find it difficult to pay somebody to spray their crops for them. The remaining 40% said that pests affect their crops but they use local pesticides to spray them. They said that they received this training from WASDA and that now pests do not destroy their crops.

Sustainability

Eighty percent (80%) of the respondents said that they will be able to sustain their vegetable garden without the support of WASDA because they now have the adequate skills and knowledge in vegetable production. They also said that they usually make a seasonal contribution in order to maintain their fence and wells, and to collectively purchase seeds and fertilizers when necessary.

Below is the table representing the challenges faced by vegetable gardeners in Jendeh village—one hundred percent (100%) of the participants in focus group discussion complained of poor roads which make it difficult for them to get transport to get their produce to the market. Sixty percent (60%) of the total respondents said that their marketing kafoo is not active due to mistrust among themselves. Ninety percent (90%) of the respondents requested the need to have storage facilities in order to store their perishable produce. All the participants in the focus group discussion, which constituted hundred percent (100%) of the total participants, said that the wells they have do not have adequate water and they should be made deeper.

Table 15: Challenges faced by vegetable gardeners

Challenges	Tally	%
Poor communication (difficulties to access market)	10	100%
Weak marketing kafoo	6	60%
Lack of good storage facility for perishable crops	9	90%
Inadequate wells and water	10	100%

Below are detail discussions of challenges the vegetable gardeners in Jendeh village face as tabulated above;

Poor Communication

All the respondents of Jendeh vegetable gardeners said that they find it difficult to get transport to take their vegetable produce to market because the roads are in bad condition and vehicles don't frequently ply the road. They also said that this has caused most of their perishable goods to spoil.

Weak marketing Kafo

Sixty percent (60%) of the respondents said that their marketing Kafo is weak and it is not functioning as it supposed to be. When asked the reasons for that, they responded immediately that every one of them claims to be busy and the few of them who know the market price usually sacrifice their time to sell their produce for them. They also said that some of them would always grow the same crops, which makes marketing difficult among them. Finally, they said that there is lack of sufficient trust and unity among them when it comes to individuals selling produce on behalf of others.

Lack of good storage facility for perishable produce

All the respondents said that they do not have a good storage facility for their perishable produce such as tomatoes and if not transported on time they perish quickly.

Inadequate wells and water

All the respondents said that they do not have enough wells and the two good ones they have do not provide sufficient water for their crops. They said that sometimes their crops perform badly because of a water shortage.

Case study: Aja Finey Jallow of Jendeh

Fifty (50) year old Aja Finey Jallow is the president of women vegetable gardeners in Jendeh. She is a farmer and gardener who lives in Jendeh village in the Wuli East District of URR. Jendeh is a hamlet with six compounds and six households. She is engaged in vegetable gardening, which is supported by WASDA.

This vegetable gardening provides food for her family, relatives and neighbours. She usually sells part of her produce and uses some for consumption. In her last harvest, she got twenty-one (21) bags of onions and sold nineteen (19) bags for D8550 and used the rest (consisting of two bags) for home consumption. Her husband is also a farmer but she is responsible for the family upkeep including her children's education, health, quality food and clothing. This vegetable gardening earned her a ticket to Muslims' holy place Makah for pilgrimage in a competition that was organised by National Agricultural Research Institute (NARI) where she emerged first in terms of best practices of vegetable production.

She is also among the beneficiaries of URRLIFE/LEAP project and she was trained on the best practices of agriculture. She also benefited from the continuous support of WASDA in terms of seeds, pesticides, chain-link ware and wells for their garden. She now has adequate knowledge of making compost manure and local pesticides that are important in increasing soil fertility and avoiding the destruction made by pests. She is now living a good life with a balanced diet. She asserted that vegetable gardening is the easiest work to do when you have adequate knowledge on how to do it and you also know the market price before selling your produce. She also advised her colleagues to grow different crops in order to avoid market glut and increase consumers' demand on different varieties of crop produce in the market.

Darsilameh vegetable garden

Darsilameh is a small Mandinka community with sixty (60) compounds and sixty-five (65) households. It is mainly an agrarian society with other ethnic groups forming the minorities. The vegetable gardeners in this community are also among the beneficiaries of this project.

The start-up cost of the vegetable garden in Jendeh village

Table 16: Number of respondents, sex category and start-up cost which includes cost of fencing, digging wells, ploughing, weeding etc.

Respondents per household	Male/female	Cost of fencing
H 1	F	Each of them contributed D200 at the initial stage for fencing. However, WASDA supported them with chain-link ware and wells in their garden.
H 2	F	
H 3	F	
H 4	F	
H 5	F	
Total number of respondents per household is 5		

Discussions

This section shows the number of respondents, when they were asked and the reply that they received support from WASDA in terms of chain-link ware in order to protect their garden, wells and seeds. They also said that they received training from WASDA on process and procedures involved in making compost manure and local pesticides.

Ongoing operational cost (fertilizer, seeds, pesticides etc) and the quantity of return of vegetables and their value

This part of the report covers the cost involved in fertilizers, pesticides and seeds and the help WASDA provided to them in respect to the aforementioned items. It also gives detailed information about the quantity of produce from the vegetable gardens and the amount of income it generated for vegetable gardeners in the last harvest season.

Table 17: Costs of fertilizer, pesticides, seeds and value of produce

Respondents per household	Fertilizer	Pesticides	Seeds	Value of produce in dalasi
H 1	D300	-	D1000	D5000
H 2	D125	D200	D300	D4000
H 3	D250	D125	D500	D11000
H 4	D1300	-	D150	D4000
H 5	D1300	D300	D500	D5300
Totals	D3275	D625	D2450	D29300
Total averages	D655	D125	D490	D5860

Discussions

The above table shows the amount each spent on fertilizer, which stands at an average of D655. Each respondent also spent averages of D125 on pesticides and D490 on seeds. Two of the respondents said that they make the local fertilizer, which they learnt from WASDA's training. The respondents invested a significant amount of money to purchase seeds as compared to fertilizer and pesticides. The respondents also said that WASDA used to help them with seeds but now they do not get any seeds from WASDA. Each gardener gets an average of D5860 for this last harvest excluding some of the produce they use for home consumption.



Photo: Vegetable garden at Darsilameh village.

Social and environmental impact of vegetable garden in Darsilameh village

Table 18: Summary of social and environmental impact the vegetable gardening has brought to the beneficiaries of Jendeh.

Outcome	Tally	%
Increased production	5	100%
Profitability of the scheme	5	100%
Sufficient food throughout the year	3	60%
Strengthened social cohesion and social activities	5	100%
Reduction in soil fertility	5	10%
Destruction by pests	5	100%
Sustainability	5	100%

Discussions

Increased production

All of the respondents said that their productivity increased because of the training they received from WASDA on methods and new techniques of making nursery beds, spacing between crops and how to make compost manure and local pesticides.

Profitability of the scheme

When asked, the respondents said that it is profitable because they earn nearly D4, 000 in every harvest. They also said that it provides enough food for them throughout the year and the money that should be spent on vegetables is diverted to provide school fees and clothing for their children. While the produce from rice supplements it to make food available and sufficient.

Sufficient food throughout the year

Sixty percent (60%) of the respondents said that the income and produce from gardening enabled them to have food in their house all year round. They also said that the income generated from the vegetable garden enabled them to provide a quality balanced diet for their families. The remaining 40% respondents said that it generates income and food for them but it is not sufficient for home consumption. When asked about reasons why it does not serve them for the whole year, they said that they have many people in their household to feed. They also said that they use the income generated from gardening for several

purposes including clothing, paying school fees and providing uniforms and learning materials for their children. They said that they usually help their relatives and send some produce to them at the urban centres.

Strengthened social cohesion and social activities

All the respondents said that gardening fosters social cohesion among them and helps them to carry out their religious and festive occasions. They also said that they make collective contributions to maintain their fence and wells and it also helps them to pay their Kafo dues regularly. They also said that this gardening helps them to support each other during festive and religious occasions.

Reduction in soil fertility

However, all the respondents asserted that their soil is reducing in fertility. When asked about the cause of this, they said that it is due to continuous cultivation of the same plots. They said that it is costly to purchase fertilizers and they have to depend on compost manure for their crops to survive. However, one explanation of the reduction in soil fertility may be too much dependence on artificial fertilizer.

Destruction by pests

All the respondents said that pests are destroying their crops. However, they were not able to tell exactly which type of pest usually affects their crops. They said that pesticide is expensive for them to purchase. When asked what mechanism they use to control it, they said that they usually uproot those plants affected by the pests so that the disease will not transfer to the other ones.

Sustainability

All the respondents were optimistic about the sustainability of their gardening project because of their seasonal contributions and the series of training they received from WASDA. Similar issues were echoed during a focus group discussion with nine (9) beneficiaries of this vegetable garden with all of them being women.

Table 19: Challenges gardeners are facing

<u>Challenges</u>	<u>Tally</u>	<u>%</u>
Poor communication (difficulties to access market)	9	100%
Weak marketing Kafo	6	66.6%
Lack of good storage facility for perishable crops	9	100%
Inadequate wells and water	3	33.3%

The above table shows the challenges that the gardeners at Darsilameh village are facing among which includes bad roads, which affects the movement of their goods from the garden to the market, weak marketing kafoo, and lack of storage kafo to preserve perishable crops and inadequate wells. They are elaborated below.

Poor communication

Hundred percent (100%) of the respondents said there is bad road network connecting them to Basse. There also said that this affects their marketing process as most of their perishable crops perish or sometimes they sell it to middlemen at a lower price because they have no other option.

Weak marketing Kafo

An estimate of 66.6% of the respondents said that their marketing Kafo is weak. When asked what causes that, they responded immediately that some of them are not willing to listen to each other when it comes to growing different crops to avoid market glut. They also said that they find it difficult to get updated market information.

Lack of good storage facility for perishable crops

All the respondents from Darsilameh village said that they do not have good storage facilities to keep their perishable crops. They also said that they are looking for help to get reliable storage facilities.

Inadequate wells and water

When asked about the conditions of their wells, 33.3% said that the wells they have are not enough and there is always a shortage of water. The rest of the respondents said that they do not have problems with their wells.

Limbambulu Yammado village

Youth group

Limbambulu Yammado is a small village with twenty (20) compounds and twenty (20) households. It is a Mandinka community that benefited from WASDA activities. A focus group discussion was held with Sotokoto youths Kafo' of Limbambulu Yammado which was attended by nine (9) men and four (4) women.

Types of training the group has benefited from, from WASDA

During the focus group discussion, participants were asked about the type of training they received from WASDA, they responded saying livestock and agroforestry management.

Table 20: Summary of the responses from the participants

Trainings the group benefited from	Tally	%
Livestock management	13	100%
Forest management	13	100%

Discussions

Livestock management

Two groups of men and women were engaged in focus group discussions and all responded positively, saying that they have received training from WASDA on livestock management. When asked how they got their livestock, they responded that they were provided with 20 sheep (5 male & 5 female) which have multiplied and now they have twenty-three sheep (8 male & 15 female). According to them, they have earned income from the sales of the sheep. For example from their first sales of four rams they earned an income of D13, 000 and in the second sales, which included two rams, they earned an income of D4, 500.

Among their challenges is the mysterious disease that has killed eight of their sheep last year and they are afraid that this year it may make a come back.



Photo: Livestock of Limbambulu Yammado youth group

Agroforestry Management

The two groups of men and women involved in focus group discussion said that they have received training from WASDA on agro-forestry management and the training has benefited them because it enabled them to use remains of their animals to enhance their orchard's and garden's soil fertility and it also enabled them to increase their income from the sales of livestock. Also, gaining knowledge in agroforestry management and planting of trees has enabled them to have more fruit trees, such as mango trees, which there was not enough of in their village prior to the implementation of this project.

WASDA Executive Committee

Discussions

On the 3rd September, an interview was conducted with six (3 male & 3 female) WASDA Executive Committee members at WASDA office. Among the six interviewees, only one person served for six years in this committee and the rest served less than six years. The executive committee members usually conduct monthly meetings and an Annual General Meeting (AGM). Key among the functions of the executive committee members is to ensure that WASDA is governed with appropriate plans and strategies in order to better serve its members. In doing this, they review WASDA'S rules and evaluate activities that WASDA accomplished. The Executive committee members participate in making decisions about any new projects that WASDA intend to implement and they are also responsible for identifying 'kafoos' as partners to WASDA. They encourage youths in the region to venture into informal jobs such as horticulture, skill training, farming, livestock management, welding and so on.



Photo: Focus group discussion with WASDA Executive Committee members

These are some of the challenges WASDA executive committee identified:

- Inadequate capacity building for Executive Committee Members and the need to have an allowance in order to attend meetings since they incur transport costs.
- Communication problems that affect the attendance of the meetings.

All WASDA Executive Committee respondents said that in most cases WASDA do not give any allowance for transport fares to attend meetings. This made it difficult for them to attend meetings regularly in addition to the bad road conditions. They call on CU, WASDA, the Government and other relevant stakeholders to support them in resolving the matter.

Women's groups

Focus group discussion was organized among the women's group of Kanapeh on 31st September 2013 and was attended by six (2 male 4 female) participants. According to the participants, they benefited from training at WASDA training centre. These trainings centered on the best practices of livestock management and agro forestry. They were trained on how to select the best site for establishing a horticulture garden, which is free of soil erosion. They were equipped with the knowledge and skills to make use of compost manure and to put locally made pesticide made out organic material on their crops. In addition, they also acquired new skills on how to go about nursery bed management and standard crop bed making.

Two long term students

WASDA provide training for long-term students, both 'off-farm' and 'on-farm' and gives loans to them to start-up their livestock, horticultural or welding enterprise. On 4th September, one of the long-term students who had already graduated and started her livestock management at Barrow Kunda asserted that she was trained by WASDA on livestock rearing and the business has improved her living condition. She received a loan of D10, 000 after her training. She hasn't started selling livestock but she is anticipating getting a high return during the coming Muslim feast of Tobaski. With the loan she received from the credit union, she was able to buy six (6) sheep. From which she was able to get two (2) goats. She also earned income from injections and treatment of the livestock of people in her neighbourhood, a skill that she learned during her six (6) months intensive training at WASDA training centre.

Another long-term student from Kuwonkunding village was trained in welding for nine (9) months through support from WASDA. After his training, he secured a loan of D57000 to purchase a welding machine. According to him, his life has improved because he can pay for medical bills for himself and his family. He built his own workshop. He also responded that he could now buy clothes for himself and his younger ones. He said that four people in his family are entirely dependent on him and he is responsible for their food and school fees.

Case study: Yakuba Touray of Kuwonkunding

Mr. Yakuba Touray is 22 year old man who lives in Kuwonkunding village. He is among the long-term off-farm students of WASDA. He underwent nine months intensive technical training in metal works. After the completion of his training, WASDA gave a loan of D57000, which accrued an interest of D17000. He is a hardworking and industrious young man who is determined to pay the loan and interest as soon as possible. He has a noble profession that usually earns him D700 per month. He can make various items among which include carts, simple farming instruments, charcoal pots, building materials and so on.



Photo: Mr. Yakuba Touray, long-term student at Kuwonkunding village.

Before this training, he was entirely depending on his family for everything and did not have any skills to earn something in order to provide clothes for and help his aging parents. With skills he now has, he is responsible for his family's food and wellbeing. Four people including his parents are dependent on him. This skill provides a decent job for him and has uplifted his societal status. He can now contribute effectively to his family and community social activities. They now have a ram to sacrifice every Tobaski, which before his father found difficult to afford. It was a life changing experience for him and he is anticipating gaining more benefits and training from WASDA. He is currently training one of his younger brothers at his workshop.

Conclusion

These impact studies reveal that rice cultivation using pump irrigation schemes established and managed by farmers can ensure food self-sufficiency in this region, reducing hungry months to 0. The investment costs to establish the irrigation schemes can be repaid within one cropping season. Once established, allowing for depreciation of the pumps over 5 years and using an estimated value of labour, the rice schemes are highly profitable providing a return of 2-3 times the costs invested for each crop. The model appears ready for wide scale replication if the right financing model is in place.

The studies also show that women's groups and youths received adequate training on agricultural best practices. From observation and discussion, these groups have adequate knowledge on livestock management, horticulture, forest management and making of compost manure and local pesticides. It also indicates that there was massive training and step-down training in these communities.

The two respondents among the long-term students are doing well. There is also significant improvement in livestock management at Limbambulu and live fencing using relevant trees, which protect the environment. It further reveals the devastating flooding that happened during the last rainy season, which affected farmers' easy access to their rice fields.

Annex 1: Acronyms and Abbreviation

CU	Concern Universal
WASDA	Wuli and Sandu Development Agency
NaNA	National Nutrition Agency
LEAP	Livelihood Empowerment Agricultural Programme
URR	Upper River Region
NACCUG	National Association of Credit and Cooperative Unions of the Gambia
NARI	National agricultural Research Institute

Annex 2: Terms of Reference for the Abdoulie Jabang working visit to URR and M&E Framework of LEAP project

Staff: Abdoulie Jabang

Date: 27th August to 8th September 2013

Background:

Abdoulie's trip to LEAP project sites in URR is for him to provide support in the implementation of LEAP project activities. The trip is imperative to serving as practical learning process to Abdoulie in the area of project management including monitoring and evaluation. Also the product of his visit will be useful in fine-tuning strategies being deployed in the implementation of the project at field level.

While over there, Abdoulie will work closely with WASDA LEAP Project Officer (PO), with the WASDA Director working in an oversight role:

1. To support WASDA in the organisation of the field day, within which holding a trade fair is an event.
2. To support WASDA extension agents in collecting and recording data within villages, as required by the project
3. To work with the Project Officer and their team to collect data on rice yields.
4. To work with the team to carry out impact studies on the following:
 - Two rice fields
 - Two vegetable gardens
 - Two long term students (on & off farm)
5. To establish the level of satisfaction of WASDA Executive members, youth groups and women's groups regarding the services they received from WASDA.
6. Conduct case studies on 3 important trends/issues that may come out of the impact studies mentioned above.

Annex 3: Rice Fields

Checklist

Documents the economic, social and environmental impact of the WASDA irrigated rice schemes:

Economic

1. What is the start-up cost for the rice irrigation area (e.g. equipment, canals, etc.)?
2. What are the ongoing operational costs (e.g. fuel, maintenance, etc.)?
3. What are the costs per household for rice production (e.g. fertilizer, pesticide, seeds, etc.)?
4. What are the returns? I.e. how much rice is produced and what is the value of that produce (present this both in total and per household)? What are households doing with the rice (selling, consuming or both)? If they're selling how much do they earn? Break down income by gender.
5. Based on this, how profitable is the scheme, both at a household and group level?
6. How likely is it that the communities will sustain it (e.g. what is the potential for the community to replace the pump when it wears out)?

Social

7. What has been the social impact of the rice irrigation areas?
8. What is the impact of the additional rice production?
9. Are there other benefits?
10. Break down by gender.

Environmental

11. Are there any environmental impacts: positive or negative?

Annex 4: Checklist and list of participants in focus group discussion with women gardeners

Checklist

Documents the economic, social and environmental impact of the WASDA irrigated vegetable garden schemes:

Economic

1. What is the start-up cost for the vegetable garden (e.g. equipment, canals, etc.)?
2. What are the ongoing operational costs?
3. What are the costs per household for vegetable production (e.g. fertilizer, pesticide, seeds, etc.)?
4. What are the returns? I.e. how many vegetables are produced and what is the value of that produce (present this both in total and per household)? What are households doing with the vegetables (selling, consuming or both)? If they're selling how much do they earn? Break down income by gender.
5. Based on this how profitable is the scheme, both at household and group level?
6. How likely is it that the communities will sustain it?

Social

7. What has been the social impact of the vegetable production areas?
8. What is the impact of the additional vegetable production?
9. Are there other benefits?
10. Break down by gender

Environmental

11. Are there any environmental impacts: positive or negative?

List of names of participants in focus group discussions

Jendeh village

1. Mariama Sanyang
2. Isatou Darboe
3. Duso Sajaw
4. Awa Sawaneh
5. Fatoumatta Nyang
6. Fatoumatta Ceesay
7. Lalla Touray
8. Aja Finey Jallow
9. Sonna barrow
10. Lisa Jatta

Darsilameh village

1. Jabu Jarreh
2. Tonbong Danso
3. Jarrai Jabbi
4. Fatoumatta Janko
5. Jainaba Ceesay
6. Sirreh Jabbi
7. Kobai Njabally
8. Jabu Wally

9. Kumba Fofana

Annex 5: Checklist and list of participants in focus group with youth groups

Checklist

1. Do you benefit from any training from WASDA?
2. If yes, what kind of training have you benefited from, from WASDA?
3. What benefits do you attribute to this training? (Economically and socially.)
4. Have you received any assistance or microfinance as start-up from WASDA after your training?
5. In what ways has this assistance or microfinance benefited you?
6. Are you part of any marketing kafoo?
7. Does marketing kafoo benefit you? If yes, in what way does it benefit you?

List of names of participants in focus group discussion at Limbambulu Yammado

1. Almameh Fatty
2. Sarjo Fatty
3. Karafa Fatty
4. Alanso Jawleh
5. Muhamadou Camara
6. Musa Drammeh
7. Katibe Danjo
8. Manjang Jawla
9. Mankamang Fatty
10. Mariama Fatty
11. Fanta Fatty
12. Tenneng Danbeleh
13. Fatoumatta Danbeleh

Annex 6: Checklist and list of participants in focus group discussion with WASDA Executive Committee

Checklists for focus group with WASDA Executive Committee members

1. How long have you been a member of WASDA Executive Committee?
2. How many meetings have you conducted as a WASDA Executive?
3. What are some of the issues you discuss in your meetings?
4. What support do you give to WASDA?
5. Have you attended a General Assembly Meeting?
6. What are some the challenges you are encountering as executive members?

List of female participants

Names

1. Kumba Bah, Sarreh Demba Toro
2. Mariama Bah
3. Mabintou Jabbi
4. Kaddijatou Sowe
5. Mariama Sillah
6. Haja Sarjo Njabally

Villages

- Sarreh Demba Toro
- Sarreh Samba Kekuta
- Nyakoi Kerewan
- Sarreh Hamadi
- Darsilameh
- Bajakunda

List of male participants

Names

1. Demba Jallow
2. Abdoulie Sanneh
3. Nafa S. Jabai
4. Malang Dem
5. Lamin Touray
6. Ali Sowe

Villages

- Sarreh Ngai
- Sinchu Golly
- Sutokoba
- Sarreh Samba Baidi
- Kuwonkunding
- Sinchu Sura

Annex 7: checklist and list of participants of women's groups

Checklist

1. Do you benefit from any training from WASDA?
2. If yes, what kind of training have you benefited from, from WASDA?
3. What benefits do you attribute to this training? (Economically and socially.)
4. Have you received any assistance or microfinance as start-up from WASDA after your training?
5. In what ways has this assistance or microfinance benefited you?
6. Are you part of any marketing kafoo?
7. Does marketing kafoo benefit you? If yes, in what way does it benefit you?

List of names of participants by village

Kanapeh women's group

1. Burang Suso
2. Hamadi Sanneh
3. Binta Kuyateh
4. Jankey Sanneh
5. Jassej Sakiliba
6. Sannehba Wali

Kerewan Badala women's group

1. Karamu Conteh
2. Bintou Fatty
3. Khadijatou Bah
4. Sarjo Wali
5. Nenejo Camara
6. Chernon Jallow

Koro Jula Kunda women's group

1. Bama Camara
2. Mandeh sanno
3. Codou Sanyang
4. Aja Danso
5. Funney Danso
6. Awa Sillah
7. Haja Manneh
8. Jarra Danso

Sareh Musa village

1. Buba Sowe
2. Jannatou Mballow
3. Hawa Kandeh
4. Kumba Sanneh
5. Jiba Mballow
6. Fatoumatta Camara
7. Meta Jawo
8. Juldeh Mballow

Chemanbugo village

1. Kumba fatty
2. Kaddijatou Ceesay

3. Isatou Sakiliba
4. Jabu Jabbi
5. Tai Sumareh

Annex 8: Checklist for long term students

1. Do you benefit from any training from WASDA?
2. What kind of training have you benefited from, from WASDA?
3. What impact does it have on your life? (Economically and socially.)
4. What were your living conditions like before you benefited from this training?
5. What are your living conditions like now after receiving this training?
6. Do you receive any assistance or loans from WASDA as start-up cost after training? If yes, how much?
7. What is your average income you from your new skill?