



**NARI – EU ARD PROJECT
SOLOMON ISLANDS**

MINISTRY OF AGRICULTURE & LIVESTOCK

END OF PROJECT REPORT

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MAP OF SOLOMON ISLANDS

Part of the Solomon Islands Map depicting the 3 Project Sites (with the red dots)



ARULIGHO PROJECT SITE, GUADALCANAL – SOLOMON ISLANDS

1. SITE DESCRIPTION

The Aruligho site is located on Guadalcanal Island west of the Solomon Islands Capital City, Honiara and is approximately one hour drive from the city. This area of three settlements hosts approximately 125 households. The site was selected for extreme soil moisture deficit which is evident from data that this specific site receives more rainfall in November-December period but experience prolonged dry spells over the other months of the year. The heavy clay to sandy soil types common in this area has complicated soil moisture availability for crop growth.

The farm land of this specific site can be generally categorized into two areas.

The first one would be land areas which are prone to periodic flooding near to small streams that drains most of the topsoil and contains stony subsoils almost to the surface. This farm soils are believed to be fertile but are moderate to low in potassium status. Cultivation is hampered by stones but otherwise the choice of crops is wide. The second farm soils are situated on steep slopes adjacent to incising streams. These soils are moderately fertile but under grassland there may be a deficiency in sulfur. Apart from this the land can be used for a wide variety of annual and perennial crops.

Staple food crop in the area includes; Sweet potato (*Ipomoea batatas*), cassava (*Manihot esculenta*) and banana (*Musa*). Common vegetable grown include slippery cabbage (*Abelmoschus manihot*), watermelon (*Citrillus lanatus*) and cucumbers (*Cucumis sativus*). The fruit tree crops are grown mainly for cash includes mango (*Magnifera indica*), star fruit (*Averrhoa carambola*), ngali nut (*Canarium indicum*), avocado (*Persea americana*), guava (*Psidium guajava*) and pawpaw (*Carica papaya*).

Generally, the farmers adapt the predominant slash and burn (shifting cultivation) farming method incorporated with the prominent mix and intercropping system. Some farmers employ semi commercial farming in the production of water melon, guava and pineapple to sale at the city market. The main sources of income for these villagers are from subsistence and semi-commercial farming, non-farming activities and remittances from relatives who work in the city.

1.1 SWOT Analysis

This SWOT Analysis was derived from the baseline survey conducted prior to the to assess the site needs

Strengths:

- Proximity to capital and market
- Commercial cash crop production
- Good infrastructure and transport
- Farmers are already exposed to some new technologies
- Easy access to new technologies
- Potential linkages to other NGOs and Government services
- Willingness to collaborate
- Very good access to urban markets and services
- Good access to land for food production (≤ 2 ha)
- Have food and cash crops for income
- Household food in good proportion from different sources
- Four major protein meats (fish, mutton or lamb, pork, chicken)
- Much of the meat for household food is bought at the market or supermarket
- Active main market
- A strong interest in a variety of livestock

Weakness:

- Decreasing number of rainfall events
- Increasing temperatures
- Loss of soil fertility
- Soil erosion
- Moisture stress during various stages of crop growth
- Food shortage – system do not allow sufficient food for a period of 10-12 weeks
- Food not stored in during period of shortages
- Strong reliance on purchased meat protein
- Strong reliance on relatives/friends/other villagers – communal life
- Few people have knowledge of improved livestock feeding (17.6%)
- Fair use of pasturage
- Less people kept livestock (36%)

<p>Opportunities:</p> <ul style="list-style-type: none"> • Good scope for improved technologies for soil improvement, soil moisture conservation, upgrade of supplementary irrigation, water harvesting and water recycling • Good access to services and developing different business • Potential for meat market – presently? • Scale? • Pigs bought by a number of household • Strong prioritization for chickens, pigs and ducks 	<p>Threats:</p> <ul style="list-style-type: none"> • Population growth • Urban center – decreasing availability of labour due to migration to Honiara and seasonal work options • Low investment in intensive agriculture due to other income options • Total loss of soil fertility • Vatukulau community – prolonged drought periods and flooding result in food shortages • VC –Population increase resulting in limited land and short fallow period • Duidui community – flooding resulting in sand being deposited on cropping field • Strong reliance on relatives/friends/other villagers – communal life? • Livestock rely heavily on household gardens and kitchens • Exposure to coastal events • Socio-economic challenges from urban environment
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2. PRIORITY ISSUES FOR ARULIGHO COMMUNITY

The project has employed a participatory process to come up with the priority issues of the community. The process includes identifying the needs through conducting a baseline survey in the community, reporting back the findings to the villagers through a community workshop and thereafter allows the villagers to prioritize their issues through vote where all genders have equal opportunity to express their views.

2.1 Priority ranking of issues identified and discussed at the community workshop (Ranks: 1st=Green; 2nd = Yellow; 3rd = Blue; 4th = Orange)

Issues identified and discussed	Voters		
	Women	Men	Both
1. Improve production of cassava and sweet potato	13	20	33
2. Protect the soil of my plot from erosion for sustained food production	7	16	23
3. Diversify my livestock holdings for food and income	3	0	3
4. Introduce variety of crops and staples or other crops	1	5	6
5. Improve the fertility of my soil for higher productivity	10	3	13
6. Improve utilization of staple crops through processing for food and feed	7	0	7
7. Manage and protect my water resources	4	6	10
8. Manage and protect my crops during times of drought	8	4	12
9. Improve feeding systems for chicken and pigs	4	21	25
10. Protect my crops from too much water and hot sun	6	0	6
Total Votes	63	75	
No. of farmers	21	25	42

2.2 Priority Issues selected and explored in group discussions

Selected Issues	Discussing points covered
1. Improve production of cassava and sweet potato	1) identify the known constraints to cassava and sweet potato; 2) how important are cash crops to food security(pineapple, mango and watermelon); 3) check seasonality of harvests; 4) check how gaps in staple food supply can be bridged

9. Improve feeding systems for chicken and pigs	1) check chicken and pigs as the priority species for improve management; 2) identify the constraints now of feeding chicken and pigs; 3) check how and when these contribute to food security; 4) confirm the list of staple crops used to feed livestock; 5) identify crop parts used for feed
2. Improve soil fertility for higher productivity & protect the soil from erosion for sustained food production	1) check their perception on soil fertility; 2) which crops are mainly affected by soil fertility decline; 3) check location of affected crops; 4) how long do they cultivate plots before fallow; 5) what type of soils are affected by erosion; 6) check the location of plots most affected by erosion; 7) identify soil types and their locations; 8) check intensity of cropping on the same plot

3. INTERVENTIONS IMPLEMENTED

3.1 Planned interventions developed for the prioritized issues identified

Selected Issues	Planned Interventions
1. Improve production of cassava and sweet potato	<ul style="list-style-type: none"> • <i>Pathogen tested planting materials for sweet potato and cassava</i> • <i>Farm Field schools for pilot testing sweet potato and cassava varieties</i>
2. Improve feeding systems for chicken and pigs	<ul style="list-style-type: none"> • <i>Training and demonstration on improved management of chicken and pigs</i> • <i>Demonstration of lower cost feeding systems for chicken and pigs</i> • <i>Distribution of breeding stock (Chicken and ducks)</i>
3. Improve soil fertility for higher productivity & protect the soil from erosion for sustained food production	<ul style="list-style-type: none"> • <i>Training and demonstration on soil erosion and moisture management</i> • <i>Soil fertility improvement and management demonstration</i>

4. SUMMARY OF ACHIEVEMENTS

4.1 Site Achievement per Site Outputs

4.1.1 Farmer-preferred drought tolerant sweet potato varieties identified and available to the Aruligho community

- *4 field trials and demonstrations were conducted and established, 4 lead farmers participated. 8 SPC/MAL sweet potato varieties were introduced with new improve practice using 1 vine cutting per mound, 2 sets of trainings complementarily conducted with the establishment of the trials, 23 and 18 farmers were trained respectively, a field day to evaluate the different SP varieties was also organized*

4.1.2 Capacity for growing cassava using improved locally acceptable production practices and farmer-selected varieties increased in the Aruligho Community

- *6 SPC/MAL varieties of cassava were introduced, new technology of 1 cutting per mound introduced, 3 field trials/demonstrations were established, a training was conducted simultaneously where 27 farmers participated, a field day was successfully conducted where local media and other stakeholders were well represented*

4.1.3 Capacity for growing yam using improved locally acceptable production practices and farmer-selected varieties increased in the Aruligho community

- *3 field demonstration were set up, a new technology of yam minisetting was introduced and taught to 27 farmers who participated, the training was conducted simultaneously with the establishment of the trials, 3 lead farmers were engaged in this undertaking, miniset size and spacing were evaluated with these 3 trials*

4.1.4 Increased capacity of interested farmers in Aruligho community for using improved chicken and pig feeding and management practices

- *A total of 8 trainings on housing and feeding management were conducted, 2 each for broiler, village chicken and pigs, 28 lead farmers in total participated, 84 farmers attended all trainings*

4.1.5 Increased capacity of interested farmers in Aruligho community for raising other new livestock animals (Goats, Ducks and Bees) with appropriate management practices

- *A joint training was conducted for goat and duck farmers, 23 farmers participated*

4.1.6 Increased capacity by participating farmers to use improved soil management practices addressing constraints of soil erosion, water deficit and fertility.

- *3 trainings were conducted, 1 each on soil fertility management, soil erosion management and importance on soil moisture & Irrigation, 3 demonstration/trials were established with 3 lead farmers, 34 farmers altogether attended the trainings*

5. COMMUNITY RESPONSE

5.1 Responses from communities during the implementation

Overall farmer have shown great interests in receiving new farming technologies developed and implemented by the project. The NARI broiler high energy concentrates feed results has raised eyebrows of the participating rural farmers and other interest has been received from farmers outside of the project sites. The rate of adoption of some of the new technologies may be lower than expected but what has transpired over the 4 years has changed the mindset of the farmers to some extent and more so the awareness of climate change and its impact on food production to the rural populace. The table 5.1.1 below is the summary of some of the significant issues that arise during the course of the project implantation on site

Table 5.1.1 Issues of significance that impacted the project implementation schedules

LESSONS LEARNT (Issues arising during implementation)		ACTION TAKEN (Decisions made by the project office in addressing the issue)
1	Some lead farmers are reluctant or are not serious enough to pursue their roles as lead farmers in looking after the demonstrations and sharing the knowledge with other interested farmers	Agriculture extension officer on-site was advised to take up the role to regular maintain the abundant demonstration plots
2	Misunderstanding among farmers of Duidui settlement on selecting and identifying lead farmers for project activities	The project team visited the settlement and meet with the elders and women and communicate the purpose and the objectives of project and it is well received - resolved
3	Prolonged drought destroys 2 complete yam demonstration plots and these plots are situated on a very sandy soil type	The project team have to select a new site – need to do a better site selection for the demonstrations
4	Attendance and participation of farmers – some villagers missed important training/workshops	Institute better communication between the extension officer on the ground with the lead farmers. Awareness of the activity should be done well ahead of schedule training

6. FINAL ASSESSMENTS AND COMMENTS

Table 6.1: Technology performance

Technology	Performance -Better -Same -Poor	Area Cultivated (for crops)			For Livestock, do they plan to continue in the future? -Yes -No	General Interest from the community- High (H) Medium (M) Low (L) Give Reason	Engage in Market. If Yes, What is the price?
		Old practice	New Practice	Plan to Expand, If yes by how many			
Improve production of cassava and sweet potato (SP)	Better, more tubers (Cassava & SP)	-Cassava (Sizes depend on family needs & willingness of farmers) -SP (70 m ²)	-Cassava-100 m ² -SP -100 m ²	100+ m ² (Both Cassava & SP)		High, given the improvement in yield Performance of crops (Cass & SP)	Sweet Potato sold for SD\$10/heap
Improve feeding systems for chicken and pigs	Better				Yes	High, fast growth with higher \$ value in short period of time Chicken-improved performance, increase income	Pig, SD 2000 Broiler- SD 100 Egg-SD \$4
Improve soil fertility for higher	Better, Vetiver is					Medium, need to be promoted and	

productivity & protect the soil from erosion for sustained food production.	shown to have some positive result in reducing top soil erosion and retain soil nutrient.					benefits made known	
Manage and protect my water source	Better, provide water for domestic use and irrigation during dry periods					Medium, only one tank was introduced, need more of such	

Table 2: Food Production and Priorities

Periods of Food Shortage	<ul style="list-style-type: none"> • July to November is still the usually time food shortage is experienced which is usually caused by moisture deficit conditions (dry season).
Views on whether improved technologies would improve food shortage period	<ul style="list-style-type: none"> • Farmers have said that through the project now they understood the effect of climate change on food security, and many intent to adopt the technologies and continue to produce food for their household and also for income when there is surplus to be food secured during the dry periods (food shortage). • Improved practice for cassava is also proven to be one of the interventions that can provide food for farmers during the food shortage period therefore farmers expressed their interest to continue cultivating cassava. • Pig and poultry farmers have now understood the importance of planning their operation to cater for the time of food shortage. • Those who have not adopted and practice the technologies have said that they still experience food shortage. • Farmers were encouraged to continue practice and share the practice/knowledge/skills

	<p>learnt to others for improved welfare and livelihood overtime.</p>
<p>5 Years ago, communities voted on certain priorities. Do these still remain important or have now changed?</p>	<ul style="list-style-type: none"> • Most of the interventions introduced still remain important in the community. However, farmers have mentioned that water is one of the main important needs in the community. Water is needed for cooking, drinking and also for irrigation purpose. • Water is needed for gardening to produce food during the dry season where most of the place in Aruligho experience dry season. • A farmer also mentioned that since sun is usually strong and reduces the time for gardening, a need in the community to increase crop production in the community would be small farm machines like power tiller to substitute and maximize labor input. • Although the chickens grew well with the concentrate technology, a question was raised on the availability and accessibility of the concentrate and how farmers have access to the concentrate in Solomon Islands. • Some farmers thought that the project will continue to provide resources for them therefore, it is important to inform/educate the model farmers at the initial stage of the project.

BUMA PROJECT SITE, MALAITA – SOLOMON ISLANDS

1. SITE DESCRIPTION

Buma community is located approximately 30 kilometers south of Auki Township, the provincial capital of Malaita Province. The community was selected for soil salinity induced by the rising sea level and affecting food production. The village comprises of 75 households unit who are mainly subsistence farmers.

The land is generally flat while most of the farming area is lower than 2 meter above sea level. The soil is deep brown, very poorly drained soil derived from the reddish brown peat organic accumulations. Freshwater swamps appear in patches to the fringes of the most gardening areas. Fertility is low due to un-weathered organic deposits which influence the soil to be acidic with medium to high nutrient reserves. In some areas stony sands from coral detritus is common, low excessively in available and nutrient reserves but calcium is in excess.

Sweet potato (*Ipomoea batatas*), cassava (*Manihot esculenta*) and giant swamp taro are the main staple food crop in the area. Common vegetable grown include slippery cabbage (*Abelmoschus manihot*), tomato (*Solanum lycopersicum*) and other common traditional leafy shrubs.

Generally, farmers adopt the traditional slash and burn (shifting cultivation) farming system. Mix and intercropping cropping patterns are widely practiced in this area. Most of these coastal farmers are subsistence that depends on their garden produce to consumption. The weekly market provided at the centre of the village provides an excellent avenue for the villagers to sell or barter farm produce for money or other non-farm products. The main sources of income for these villagers are non-farming activities and fishing. Cash remitted from family members and relatives paid employment outside of the village also a regular source of income.

1.1 SWOT Analysis

This SWOT Analysis was derived from the baseline survey conducted prior to the to assess the site needs

<p>Strengths:</p> <ul style="list-style-type: none"> • Very good access to markets and services • Good access to land for food production • Have food and cash crops for income • Some form of barter system exists • Household food from various sources • Variety of meat proteins (fish, pork, chicken) • Can afford to buy fish and meat for food • Active village markets • Strong interest in a variety of livestock • Wide range of staple crops • Staple is mainly used for food • Staple is also sold for family income • Sources of planting materials of staple from own garden, as well as from markets, MAL, KGA • Also grow cocoa and coconuts (copra) – perennial cash crops 	<p>Weakness:</p> <ul style="list-style-type: none"> • Prevalent worsening soil salinity • Seasonal water logging • Food shortage; food stored for only 4 weeks (1month) • Strong reliance on own gardens • Strong reliance on reliance on relative/friends/other villagers – communal life • No one has knowledge of improved livestock feeding (0%) • No use of pasturage; heavy reliance own garden and chicken waste • Staples difficult to store
<p>Opportunities:</p> <ul style="list-style-type: none"> • Good scope for interventions in soil improvement and water logging • Potential for meat market – presently? Scale? • A majority keep livestock (71.9%) • Local chicken and pig markets • Strong prioritization for pigs, chickens and ducks • Staple used for livestock feed as well as income 	<p>Threats:</p> <ul style="list-style-type: none"> • Rising sea levels • Exposure to coastal events • Staple is sold for family income • Sources of planting material for staple from own garden, as well as relatives and friends

2. PRIORITY ISSUES FOR BUMA PROJECT SITE

The project has employed a participatory process to come up with the priorities of the community. The process includes identifying the needs through conducting a baseline survey in the community, reporting back the findings to the villagers through a community workshop and thereafter allows the villagers to priorities through voting.

2.1 Priority ranking of issues identified and discussed at the community workshop (Ranks: 1st=Green; 2nd = Yellow; 3rd = Blue; 4th = Orange)

Issues identified and discussed	Voters		
	Women	Men	Both
1. Improve the fertility of my soil for higher productivity	8	20	28
2. Improve production of cassava and sweet potato	6	4	10
3. Diversify my livestock holdings for food and income	4	11	15
4. Protecting the soils of my plot from erosion	0	6	6
5. Introducing varieties of current staples and other root crops	6	8	14
6. Protect my crops from too much water in the soil	1	14	15
7. Improve utilization of staples through processing for food and income	0	0	0
8. Improve feeding of chicken and pigs	11	12	23
9. Managing my food crops and garden from high tide	3	9	12
Total Votes	39	84	123
No. of farmers	13	28	41

2.2 Priority Issues selected and explored in group discussions

Selected Issues	Discussing points covered
1. Improve soil fertility for higher productivity & protecting my crops from too much water in the soil	1) check their perception on soil fertility; 2) which crops are mainly affected by soil fertility decline; 3) check location of affected plots if these are also affected by waterlogging; 4) identify soil types and their locations; 5) check intensity of cropping on the same land; 6) check indigenous practices to manage water logging; 7) Discuss also practices they may have to manage high seasonal king tides
8. Improve feeding of chicken and pigs and diversify my livestock holdings	1) Confirm chicken and pigs as the priority species for improved management; 2) identify the constraints now of feeding chicken and pigs; 3) check how and when these contribute to food security; 4) confirm the list of staple crops used to feed livestock; 5) identify crop parts used for feed; 6) confirm the priority species for diversification; 7) check the constraints now of acquiring these species
5. introducing varieties of current staples and those of other crops and improving production of staples	1) identify the known constraints to sweet potato and cassava production; 2) explore the variety of staple crops that the community may be interested in; 3) check the major sources of cash of crops that contribute to food security; 4) check seasonality of harvest; 5) what type of soils are affected by erosion; 6) check how the gaps in staple food supply can be bridged

3. INTERVENTIONS IMPLEMENTED

3.1 Planned interventions developed for the prioritized issues

Selected Issues	Planned Intervention
1. Improve soil fertility for higher productivity & protecting my crops from too much water in the soil	<ul style="list-style-type: none">• <i>Training and demonstration on enhanced soil fertility management</i>• <i>Training and demonstration on managing cropping cycles to allow harvest before king tides</i>• <i>Training and demonstration on improve soil drainage practices</i>• <i>Introduction of crops varieties tolerant to water logging</i>
2. Improve feeding of chicken and pigs and diversify my livestock holdings	<ul style="list-style-type: none">• <i>Training and demonstration on improved management of chicken and pigs</i>• <i>Demonstration of lower cost feeding systems for chicken and pigs</i>• <i>Distribution of breeding stock (Chicken, ducks and goats)</i>
3. Introducing varieties of current staples and those of other crops and improving production of staples	<ul style="list-style-type: none">• <i>Propagation and dissemination of clean planting material</i>• <i>Farmer Field Schools on best practices for sweet potato cultivation from site selection to harvest</i>• <i>introduction of African yam</i>• <i>training and demonstration of utilization of sago for food and feed</i>

4. SUMMARY OF ACHIEVEMENTS

4.1 Site Achievement per Site Outputs

4.1.1 Increased capacity by participating farmers to use improved soil fertility management practices

- *3 trainings were conducted, 1 each on soil fertility management, soil erosion management and importance on soil moisture, 3 demonstration/trials were established with 3 lead farmers, 34 farmers altogether attended the trainings*

4.1.2 Impact of salt water inundation on soil properties analyzed and farmers' capacity to deal with potential adverse impacts enhanced.

- *A general awareness on CC and Its impacts (sea-level rise focused) was conducted on project site where 84 villagers attended, a sea-level rise and garden elevation survey was conducted and documented, Salinity Monitoring(Automatic Rain gauge) station installed and operational*

4.1.3 Increased capacity of interested farmers in Buma community for using improved chicken and pig feeding and management practices

- *A total of 5 trainings on housing and feeding management were conducted, 1 for broiler, 2 each for village chicken and pigs, 18 lead farmers in total participated in demonstrations and trials, 177 farmers attended all trainings*
- *A joint training was conducted for goat and duck farmers, 17 farmers attended, 7 lead farmers participated in the demonstrations*
- *A training was conducted for 15 interested bee farmers, 3 bee hives established and maintained at a central location for the interested farmers*

4.1.4 Farmer-preferred excess moisture tolerant sweet potato varieties identified and available to the Buma community

- *4 field trials and demonstrations were established, 4 lead farmers participated. 8 SPC/MAL sweet potato varieties were introduced with new improve practice using 1 vine cutting per mound, 2 sets of trainings complementarily conducted with the establishment of the trials, 12*

and 10 farmers were trained respectively, a field day was held to evaluate the different SP varieties, the 12 Buma community high school year 7 students actively participated in this undertaking

4.1.5 Capacity for growing yam using improved locally acceptable production practices and farmer-selected varieties increased in the Buma community

- *3 field demonstration were set up, a new technology of yam minisetting was introduced and taught to 18 farmers who participated, the training was conducted simultaneously with the establishment of the trials, 3 lead farmers were engaged with this demonstration trial, the technology was well adopted with the 3 lead and other interested farmers continuously produce*

4.1.6 Capacity for growing cassava using improved locally acceptable production practices and farmer-selected varieties increased in the Buma Community

- *2 trainings were conducted, 1 each on soil fertility management, soil erosion management and importance on soil moisture, 3 demonstration/trials were established with 3 lead farmers, 34 farmers altogether attended the trainings*

5. COMMUNITY RESPONSE

5.1 Responses from communities during the implementation

Overall farmer have shown great interests in receiving new farming technologies developed and implemented by the project. The NARI broiler high energy concentrates feed results has raised eyebrows of the participating rural farmers and other interest has been received from farmers outside of the project sites. The rate of adoption of some of the new technologies may be lower than expected but what has transpired over the 4 years has changed the mindset of the farmers to some extent and more so the awareness of climate change and its impact on food production to the rural populace. The table 5.1.1 below is the summary of some of the significant issues that arise during the course of the project implantation on site

Table 5.1.1 Issues of significance that impacted the project implementation schedules

LESSONS LEARNT (Issues arising during implementation)		ACTION TAKEN (Decisions made by the project office in addressing the issue)
1	Some lead farmers are reluctant or are not serious enough to pursue their roles as lead farmers in looking after the demonstrations and sharing the knowledge with other interested farmers	Agriculture extension officer on-site was advised to take up the role to regular maintain the abundant demonstration plots
2	Change of Lead farmer on site – the initial selected farmer migrate to other location or town	The project team swiftly get a replacement for the migrated lead farmer.
3	Accessing livestock breeds (pig, ducks and goats) in turn discourage some farmers	The project team has to convey to the farmers of the difficulty in accessing and transporting these animal breed.
4	Delay of funds from headquarters in NARI PNG has negative impacts on the implementation of some of the activities on site	The project t team communicates clear messages to the site technicians explain the situation

6. FINAL ASSESSMENTS AND COMMENTS

All the interventions were successfully implemented and the results are presented in the table below.

Table 6.1: Technology performance

Technology	Performance -Better -Same -Poor	Area Cultivated (for crops)			For Livestock, do they plan to continue in the future? -Yes -No	General Interest from the community- High (H) Medium (M) Low (L) Give Reason	Engage in Market. If Yes, What is the price?
		Old practice	New Practice	Plan to Expand, If yes by how many			
Improving production of sweet potato and cassava	Better, more number of tubers Cassava, more tubers	N/A	N/A	N/A			N/A
Capacity for growing using improved yam production practices and farmer-selected varieties	N/A						
Improve feeding systems for chicken and pigs and diversifying my livestock holdings for food and income	Chicken – Broiler and Layer (Better) Pigs (Better)				Yes Yes	High, improved growth & body size of broiler observed within growing period.	N/A SB\$100
Improved soil fertility for high	N/A						

productivity and crop protection from excess water in the soil							
Manage my water for irrigation and domestic use	Better, more convenient to use for household purpose and for livestock.					Medium,	

Table 2: Food Production and Priorities

Periods of Food Shortage	<p>It was confirmed that food shortage is still the same as mentioned during the baseline survey which was usually experience in the months April to August and usually due to rainy periods which affect food productions.</p> <p>It was commented that, farmers need to re-identify the cropping calendar under the changing climatic condition to be able to be food secure or reduce the food gaps.</p>
Views on whether improved technologies would improve food shortage period	<p>The various crops, (cassava & sweet potato) and the improved production practice have been proven to be successful and therefore, farmers express their interest to continue with the various practice.</p> <p>Some mentioned that various banana varieties can be planted among other existing crops because it can survive their environmental stress and still become productive.</p>
5 Years ago, communities voted on certain priorities. Do these still remain important or have now changed?	<p>Farmers mentioned that the interventions are according to their needs and therefore remain important under the changing climatic condition. However, through the implementation of the interventions farmers learnt new skills and knowledge.</p>

HUNDA/KENA PROJECT SITE, WESTERN PROVINCE, SOLOMON ISLANDS

1. SITE DESCRIPTION

Hunda/Kena communities were selected for the excess moisture soil condition. Hunda and Kena are situated to the southern part of Kolombaranga Island in the Western Province. Kolombaranga in the local dialect meaning “Water King” hence reflects its prime character of receiving consistent prolonged heavy rainfall in a year. The 2 communities have about 80 households who depend on agriculture for subsistence, income and employment.

The landform in this area is hilly with steeper slopes creating this portion of land susceptible to soil erosion. Soil fertility was somewhat very low as it consists mainly of subsoil. In some areas soils are shallow and stony which offers hindrances to root development of food crops and generally other plants. Soil fertility is higher at the lower areas adjacent to the hills. To the coast narrow beaches with coconut palm is common but surrounded by either saline or fresh water swamps making drainage difficult.

Their main staples grown are cassava and sweet potato however, their major income earner is betel nut. The farmers have access to the massive township markets of Gizo to the west and Noro to the east. Most farmers practice the ever common slash and burn (shifting cultivation) farming system. Cropping system practice is mainly mixed farming. Most of these coastal farmers are subsistence that depends on their garden produce to consumption and so as their abundance marine resources. The villagers also receive remissions from relatives on paid employment outside of the village.

1.1 SWOT Analysis

This SWOT Analysis was derived from the baseline survey conducted prior to the to assess the site needs

Strengths:

- Good access to urban markets and services
- Good access to land for food production
- Have cash and food crops for income, and can afford to purchase meat for household consumption
- Some form of barter system exists
- Household food from a variety of sources
- Variety of meat protein (fish, pork, chicken)
- Active village markets; access Gizo market
- Some practice food storage
- Some farmers buy feed from markets
- A majority keep livestock (68%)
- In close proximity to Ringi Research Station for an easy technology dissemination
- Agriculture is the main source of livelihood after logging stopped
- Favorable environmental conditions for agricultural activities
- Labor is easily available
- Wide range of staple crops, mainly used for food but also sold for income
- Sources of planting materials of staple from own garden, KGA and MAL
- Also grow cocoa and coconut(for copra) – perennial cash crops

Weakness:

- Seasonal food shortages exists; system do not allow sufficient for a period of 4 weeks
- Strong reliance on reliance on relative/friends/other villagers – communal life
- Very few knowledge of improved livestock feeding (10.8%)
- Very little use of pasturage
- Food not stored during period of shortages
- Soil is highly erosion prone, and quick loss of nutrients
- Fast and steep yield decline
- Water logging in low lying areas
- Pest and disease
- Water resource not wisely used; willingness to invest, maintain and manage is missing
- Weak infrastructure
- Staples cannot be stored

<p>Opportunities:</p> <ul style="list-style-type: none"> • Good access to services and developing different businesses • Good scope for interventions in soil fertility improvement, soil conservation, management of waterlogging and RWH • field trials can be done in Ringi • Potential for chicken and pig markets • Strong prioritization for pigs, chickens and ducks • Abundant marine fishing • Staple used for income generation and livestock feed as well. 	<p>Threats:</p> <ul style="list-style-type: none"> • Excess rainfall; water logging causes flooding • Too hot prolonged dry weather • Increase incidences of pest such as red nose , SP weevil, taro beetle, caterpillar and wild pigs • Exposed to coastal weather events • Weak cohesiveness within the community • Villagers are mainly waiting for external funds and investments, not proactive • Villagers are scattered • Most people have small plots of land • Inputs in agriculture is rather low • Sources of planting material of staple from own garden, relatives and friends
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2. PRIORITY ISSUES FOR HUNDA/KENA COMMUNITY

The project has employed a participatory process to come up with the priorities of the community. The process starts with identifying the needs through conducting a baseline survey in the community, reporting back the findings to the villagers through a community workshop and thereafter allows the villagers to priorities through voting in the end.

2.1 Priority ranking of issues identified and discussed at the community workshop (Ranks: 1st=Green; 2nd = Yellow; 3rd = Blue; 4th = Orange)

Issues identified and discussed	Voters		
	Women	Men	Both
1. Improve the fertility of my soil for high productivity	15	12	27
2. Improve production of cassava and sweet potato	5	12	17
3. Diversify my livestock holdings for food and income	7	5	12
4. Protect my crop from too much water in the soil	1	0	1
5. Introduce different varieties of current staples and other root crops	8	7	15
6. Improve feeding of chicken and pigs	13	3	16
7. Protect soils of my plot from erosion for sustained food crops production	6	0	6
8. Improve utilization of staples through processing for food and feed	5	0	5
Total Votes	60	39	
No. of farmers	20	13	33

2.2 Priority Issues selected and explored in group discussions

Selected Issues	Discussing points covered
1. Improve the fertility of my soil for high productivity	1) check their perception on soil fertility; 2) which crops are mainly affected by soil fertility decline; 3) check location of affected plots; 4) identify soil types and their locations; 5) how long do they cultivate plots before fallow; 6) check intensity of cropping on the same plot
8. Improve production of cassava and sweet potato; together with introducing different varieties of current staples and other root crops	1) identify the known constraints to sweet potato and cassava production; check seasonality of harvest; 2) check how gaps in staple food supply can be bridged; 3) check if there are known preferred varieties of sweet potato and cassava; 4) identify other preferred varieties of sweet potato and cassava; 5) identify current constraints of

	acquiring these varieties; 6) check seasonality of harvests and how they contribute to improved food security
5. Improve feeding of chicken and pigs; together with diversification of livestock holdings	1) confirm chicken and pigs as the priority species for improved management; 2) identify the constraints now of feeding chicken and pigs; 3) check how and when these contribute to food security; 4) confirm the list of staple crops used to feed livestock; 5) identify crop parts used for feed; 6) confirm the list of preferred livestock species for diversification

3. INTERVENTIONS IMPLEMENTED

3.1 Planned interventions developed for the prioritized issues

Selected Issues	Planned Intervention
1. Improve the fertility of my soil for high productivity	<ul style="list-style-type: none"> • <i>Training and demonstration on soil fertility management</i> • <i>Management of soil fertility in the use of mucuna and vertiver grass</i> • <i>Extend the use of compost and mulching</i> • <i>Intervention to slash and burn practice</i>
2. Improve production of cassava and sweet potato; together with introducing different varieties of current staples and other root crops	<ul style="list-style-type: none"> • <i>Propagation and dissemination of clean planting material</i> • <i>Training and demonstration of rapid multiplication of planting material</i> • <i>introduction of African yam, beans and island cabbage</i> • <i>Farm field school on nest cultural practices on sweet potato from site selection to post harvest handling</i>
3. Improve feeding of chicken and pigs; together with diversification of livestock holdings	<ul style="list-style-type: none"> • <i>Training and demonstration on improved management of chicken and pigs</i> • <i>Demonstration of lower cost feeding systems for chicken and pigs</i> • <i>Distribution of breeding stock (Chicken, ducks and pigs)</i>

4. SUMMARY OF ACHIEVEMENTS

4.1 Site Achievement per Site Outputs

4.1.1 Increased capacity by participating farmers to use improved soil fertility management practices addressing constraints of soil erosion, excessive soil moisture and fertility

- *2 trainings were conducted, 1 each on soil fertility management and soil erosion management, 1 demonstration/trials was established with 1 lead farmers, 25 farmers altogether attended the trainings*

4.1.2 Farmer-preferred excess moisture tolerant sweet potato varieties identified and available to the Hunda-Kena community

- *2 field demonstrations were established, 2 lead farmers participated. 8 SPC/MAL sweet potato varieties were introduced with new improve practice using 1 vine cutting per mound, 1 set of training complementarily conducted with the establishment of the trials, 17 farmers were trained,*

4.1.3 Capacity for growing yam using improved locally acceptable production practices and farmer-selected varieties increased in the Hunda-Kena community

- *2 field demonstration were set up, a new technology of yam minisett was introduced and taught to 22 farmers who participated, the training was conducted simultaneously with the establishment of the trials, 2 lead farmers were engaged with this demonstration trial, the technology was well adopted with the 1 lead and other interested farmers still producing yam through minisetts*

4.1.4 Capacity for growing cassava using improved locally acceptable production practices and farmer-selected varieties increased in the Hunda/Kena Communities

- *6 SPC/MAL varieties of cassava were introduced, new technology of 1 stalk per mound introduced, 2 field demonstrations were established, a training was conducted simultaneously where 22 farmers participated, a field day was successfully conducted where 54 farmers actively participated*

4.1.5 Livestock holdings of interested farmers in Hunda-Kena community diversified and capacity for livestock management improved

- *4 trainings on housing and feeding management were conducted, 2 each for village chicken and pigs, 12 lead farmers in total participated in demonstrations, 45 farmers attended all trainings*
- *1 training was conducted each for duck and goat farmers, 12 and 6 farmers attended respectively, 5 lead farmers participated in the duck and 2 in goat farming*

5. COMMUNITY RESPONSE

5.1 Responses from communities during the implementation

The Hunda/Kena Project site receives lesser interventions and actions compared to the other 2 project site in the Solomon Islands; this is merely due to lesser number of active farmers willing to become lead farmers. Identifying and selecting lead farmers is somewhat a difficult task. However, selected lead farmers have shown determination to carry out tasks over the duration of the specific demonstrations. adoption of the introduced technologies may be lower but what has become apparent over the project years has changed the livelihood of some of the participating farmers, more so the awareness of climate change and its impact related to food production has been attained. The table 5.1.1 below is the summary of some of the significant issues that arise during the course of the project implantation on site

Table 5.1.1 Issues of significance that impacted the project implementation schedules

LESSONS LEARNT (Issues arising during implementation)		ACTION TAKEN (Decisions made by the project office in addressing the issue)
1	Weak cohesiveness within the community, especially between the 2 communities of Hunda and Kena – differences in religious beliefs	The project team consults and decided that in conducting trainings – run separate trainings at 2 different locations
2	Model farmers are mostly very old men and women and that they are not active to participate - Hunda and Kena has a high percentage of old people and very young children	The project team decides then that lesser activities be carried out on the site compared to the other 2 project sites
3	Accessing livestock breeds (pig, ducks and goats) in turn discourage some farmers	The project team has to convey to the farmers of the difficulty in accessing and transporting these animal breed.
4	Delay of funds from headquarters in NARI PNG has negative impacts on the implementation of some of the activities on site	The project t team communicates clear messages to the site technicians explain the situation

6. FINAL ASSESSMENTS AND COMMENTS

All the interventions were successfully implemented and the results are presented in the table below.

Table 1: Technology performance

Technology	Performance -Better -Same -Poor	Area Cultivated (for crops)			For Livestock, do they plan to continue in the future? -Yes -No	General Interest from the community- High (H) Medium (M) Low (L) Give Reason	Engage in Market. If Yes, What is the price?
		Old practice	New Practice	Plan to Expand, If yes by how many			
Improve production of sweet potato (SP) and cassava; together with introducing different varieties of staple crops and those of other crops	Sweet Potato (same)	SP- 27 m ²	27 + m ²	Yes, 27 + m ²		SP-Medium, prefer traditional practice Cassava-High, prefer introduced intervention given improved performance	Own Consumption
	Cassava (Better), more tubers	Cassava- smaller 100 m ²	100 m ²	Yes, 100 + m ²			
	Yam		50-100 m ²	Less than 50 +m ²			
Improving feeding of pigs and chicken; together with diversification of livestock holdings	Broiler (Better) & Layer (Better)				Yes, Yes	High, good meat, egg, income	Broiler Bird S\$ 50-100
	Pig (Same)				Yes	Pig, Medium, not properly implemented.	Eggs-S\$ 4.00
Diversify my livestock holding					Yes, wanted	High, ducks	Own

(Ducks)	Better				to continue	thrive well.	consumption
Improve fertility of my soil for high productivity	N/A						

Table 2: Food Production and Priorities

Periods of Food Shortage	May to July was confirmed as the period food shortage is experienced and is caused by dry sunny periods and also the change of whether patterns from rainy to sunny periods.
Views on whether improved technologies would improve food shortage period	Each of the interventions has contributed and continue to provide food to the village. This include interventions such as improved production practices for cassava, sweet potato, yam, including livestock management. The interventions have the potentials to generate income and also provide food as well.
5 Years ago, communities voted on certain priorities. Do these still remain important or have now changed?	<p>The interventions chosen were important and remain important however it was mentioned that the farmers need to change their attitude to really experience the benefits that comes with the interventions.</p> <p>Although, there was an established water supply system, members also mentioned that they face difficulty in accessing water during dry sunny periods.</p> <p>Some of the interventions that were included were not completed like improved feeding and management of pigs and goats, ducks therefore farmers questioned whether this will be completed or not.</p>