

**FINAL PRA REPORT FOR THE GAMBIA AGRO-ECOLOGICAL
VILLAGE PROJECT (GAEV)**

THE FINAL PRA REPORT BEING ADAPTED FROM THE INCOMPLETE DRAFT REPORT
PRESENTED BY THE PRA CONSULTANT, BORAN DANJO

THE PRA WAS CONDUCTED IN THE COMMUNITIES OF GUNKURU WOLLOF, JAHOUR
MANDINKA AND TORO BA IN SEPTEMBER OF 2004

INTRODUCTION

REAP-Canada [A Non Governmental Organisation Based in Canada] in partnership with Village Aid The Gambia [VATG], Njawara Agricultural Training Centre [NATC] and the National Agricultural Research Institute (NARI) plans to implement the Gambian Agro-Ecological Village (GAEV) project in three communities. The communities are Jahuru Mandinka and Gonkuru Wollof in Lower Saloum, Central River Division [CRD] and Toro Ba in Lower Badibu, North Bank Division [NBD]. These three party partnership agreement plans to promote ecological farming methods proven to be low cost, locally accessible, environmentally friendly and of benefit to productivity levels.

To begin the project conducted a Participatory Rural Appraisal [PRA] that enabled these communities to assess their farming practices, livelihood strategies and ecological situation. It also helped the communities to identify opportunities that are necessary to be explored for improvement in these areas. This will hopefully provide bases for sustainable action necessary to effect changes throughout the project's duration.

Objectives of the PRA

The PRA brought together all stakeholders especially the beneficiary communities to analyse their agricultural practices and farming situation and identify gaps required for improvement. The PRA identified community priority areas within the project's mandate for sustainable cooking fuel use and agriculture practices for the possible action.

The PRA process

A PRA team leader was identified to work with staff of these three institutions to carry out the PRA exercise. A one-day orientation of team members on tools identified was conducted at VATG headquarters on Tuesday the 21st September 2004. At the end of the orientation, the team was divided into three small teams of three to four members, each assigned to facilitate two to three specific PRA tools the following day.

This was preceded by sensitisation of Jahuru Mandinka where the PRA started. The team briefed the community all about the PRA and what is expected of the participants. This includes identifying 40 counterpart members [men, women and youths] and allocating their time among others within the three days allocated for the exercise. The community counterparts who were farmers identified from the cross section of the community, were also divided into three groups each assigned one of the PRA teams to serve as focal persons for information gathering. All of them are subsistence farmers not educated in western education but have good knowledge about their community and the environment. Regarding the conduct of poverty assessment as a way knowing the causes, extend and effect of poverty on individual household, an informal discussions were made with the village Alkali to identify two of the poorest in the community for follow up interview. Those identified were privately interviewed in their homes without them knowing that they are viewed as the poorest in the community.

As three days were allocated to each community, the teams adopted a method of generating discussions on each tool to enable the communities identify problems associated in that area in the first two days. All these problems were symbolised on flash cards and presented by group members during the plenary in day three. The presentations took the form of the larger group identifying broad areas for categorisation. Individuals were identified to represent as categories and all problems presented were discussed by the community and allocated to the appropriate category. This process led to ranking and identifying three top priority areas. The small group took each a priority area, identify three priority problems in each area and analyse them further to know causes and possible solutions.

PRA TOOLS USED

The objectives of the project largely determine the type of tools appropriate to generate the required information. In this regard, the team decided to use the following PRA tools;

- Transect
- Venn diagram
- Resource map
- Seasonal calendar
- Trend line
- Gender analysis
- Flow chart
- Poverty assessment

The team discussed at length the types of information to be generated from each tool and listed them down. This served as a guide for facilitating group discussions on specific tools, as they will know what type of information they are looking for. Each tool and the information expected to be generated from it follow:

Transect: this takes an overview of total land area of the community through a specific path. The transect walk is observes vegetative cover, soil types, land use pattern, problems, coping strategies and opportunities, among others. The team started the walks from the edge of the community land , passed through the village to the terminate at its core, making observations and asking questions throughout.

Venn diagram: This tool is expected to generate a representation of village and other institutions that exist within or work with the community, as well as representing the linkages between the institutions. This will enable the project to identify potential partners in specific areas. It was conducted through taking an inventory of village based and outside institutions either exist or work with the community. They later being prioritised on the bases of their services rendered to the community and linkages created to who works directly with who and why.

Resource map: This map indicates all potential resource areas especially for agriculture and its related activities available to this community.

Seasonal calendar: This looks at some of the agricultural activities carried out by the community and their time of implementation and or availability.

Trend line: this tool looks at some of the important trends in food security, environmental health, forest cover, precipitation, etc. that took place within the community within a given period and their effects on people's life.

Poverty assessment: two sample compounds are to be identified and interviewed in each community to know their state of poverty and their estimated income and expenditure.

Gender analysis: This exercise generates some of the specific production roles men and women as well as what they can access, own or control.

Flow chart: By taking a sample farmland, the community analyse nutrient flow in and out of the farm.

ANALYSIS OF PRA FINDINGS

Description of Analytical Format

The information in this report is analysed on a tool by tool basis, triangulating information from tools used in the three communities. For example, for the 'resource map' PRA tool, all the information generated *by this tool* from all three communities are discussed in a single section, with each community having its own sub-section, This particular method of analysis was chosen because it will help the reader follow the information in a logical order. Also, it will help the reader to see differences and similarities obtained from these communities. However, information in each section may overlap due to the fact that different tools discussed similar themes, but in different ways (e.g. matrices versus transects). Unfortunately, this method does not cross reference information from different PRA tools for the same community.

Resource map

Jahuru Mandinka

The community developed a resource map indicating their total land area and other vital community owned resources. The map shows that about 400 metres east of the village lies a big valley, which is saline. Over 40 years ago, that area was potential for rice cultivation but due to persistent drought spell observed over the years, salt-water intrusion and iron toxicity affected rice fields. Now the area is completely abandoned and the community walks long distance [about 3km in some cases] to reach the swamps for rice cultivation. This has greatly reduced the amount of land area used for rice production own by the community and many women do travel long distance in search of potential rice growing areas.

In the east lies a big hill just about 300 km were no agricultural activity can take place due to the rockiness and general unsuitableness of the soil, but collection of some firewood, sticks and grazing of animal does occur. On the north about 250 km is the main road that divide Jahuru and Tukolor. These problems of salinity, rocks, and unsuitable soil, greatly limit available agricultural land to this community as being emphasised many times during the discussion. According to community members

some people especially men travel to near by villages to rent farm land which is a rare practice in the rest of the country.

Gunkuru Wollof

Gukuru Wollof and Gukuru Tualor are within the same settlement area, just being divided by a small part. In some parts only a narrow road separates the two communities. However, Gukuru Tualor could not be invited to merge with its neighbour and participate in the PRA because the two communities had a problem over a bore hold provided for watering cattle. As most of the cattle owners are Fula, the Wollofs were denied from using the place to water their gardens in the dry season when competition for water increases. Interestingly, the bore hold was located on the Wollof's side of the area, and is adjacent to the garden of Gunkuru Wollof.

The map of Gukuru Wollof overlap with the farm lands of Gukuru Tualor. East of the village lies a small valley where some upland rice are grown. This was indicated in the transect walk and it is seen as the only potential area owned by the community to be used as rice fields. There is no forest near to the community. The community members walk long distances (over an hour) to collect forest products. Within the village are few mango, neem, cashew; baobab trees while small shrubs are on the outskirts of the community. In the groundnut and coos fields trees do exist, yet they are scattered and are few. Most of those trees are unsuitable as poles and cannot be used as fuel wood.

The map indicated some problems areas which includes poor soils, as can be proven by the high levels of striga infestation in the fields. Gullies created by water erosion resulted some parts being abandoned for cultivation as seen during transect walk.

The common crops grown are early millet, groundnut, maize and some small rain season vegetables. Most of these field crops are cultivated by hand, as many villagers do not have their own farm implements such as seeders, sine hoes, etc. The community admires crops like sesame and cassava but only few people grow them. The reasons given are that cassava needs protection while there are no strong and accessible sticks around the village that can be used for fencing. The sticks are far away in the bush and not many villagers have carts with which they can collect and transport them to the village. As for sesame, people largely depend on external markets and it is just recently some institutions are promoting marketing of the crop. **In view of the problems highlighted above that limit crop diversification, efforts should be made to liase with institutions to promote some crops and other tree species. Rain season gardening is a potential venture and should be better organized and developed.**

Toro Ba

According to the people this community is the oldest settlement within the area (over 900 years). As a result of it being the first in the area and therefore the community has enough farmland, as indicated in both transect and resource map. There is a village garden, which lacks proper security, as strong fence poles are not available within the area. The garden is located near the valley due to high water table in the area. Within the outskirts of the villages – especially eastwards – are lots of baobab trees. In fact, these baobab trees serve more or less like a windbreak to the community during the rain season. There is no forest but only mangrove and some

shrubs towards the river. The common field crops grown by the people as shown in the map and transect are groundnut, early millet and maize. Only limited amounts of rice and vegetable are grown, as salt water have taken most of the productive area. There is a millet milling machine and seed store which facilitates processing of cereals into food and safekeeping of their seeds before next planting season. **In the event that the project plans to introduce some type of alternative cooking stove in the community, using baobab corps as fuel wood could be another possibility to explore.**

Institutional analysis [Venn Diagram]

Gunkuru Wollof

This is rather a small community with over 98% only one tribe (Wollof) and closely inter-related. The community has only 3 village groups (societies) with ÑAXAJERIÑOW as the main group and both men and women staying in the village are members. The other two groups in the are JIBOO and MBOXAHOL, members of them young women and men mainly of reproductive age and they are all are members of the larger group.

The groups are said to provide hired labour and cultivate communal farms in addition to periodic contributions as sources of raising funds. **Observing the cohesiveness that exists between groups and members, the project can easily mobilise them for any innovation and will register great success.**

On the other hand the community identified five external institutions that they work with. These are in the order of priority:

1. Catholic relief services (CRS)
2. Village aid the Gambia (VATG)
3. Department of livestock services (DLS)
4. Federal republic of Germany (FRG)
5. Gambia women's finance association (GAWFA)

CRS through the Gambia food and Nutrition Association (GAFNA) provide supplementary nutrition food to lactating women and breastfeeding mothers monthly. This poor community attaches great importance to that food, especially during the hungry season. VATG and DLS are viewed as the community's potential partners. VATG provides REFLECT circle training for the women as well as support the garden and provide micro-credit to Jiboo group. DLS provides curative services to their domestic animals as necessary. FRG is not an organization but rather it provided funds to dig a hand pump well which is the only source of clean water to the community. GAWFA on the other hand provided a loan to the community, which they said was not helpful due to its high interest rate. A lot of women that took loan from GAWFA ended up selling some of their articles to settle the debt. Caution, local perceptions and especially the interest rates should therefore be given a high priority of any program which seeks to provide credit/loans to the community.

Among these institutions mentioned above, any of the village groups could be an entry point but "naxajerinow" which is the main village group will be a better one to

identify individual learners etc. **In the event that the project plans to introduce some group initiatives, targeting smaller groups could achieve greater success.** Regarding the external institutions, all except VATG mainly provides nutrition food supplement to children and mothers, water and medicinal services to human and livestock as well as loans to individuals. **It is therefore necessary for the GAEV project to help the groups to put together a formal agreement and signed it to serve as partnership document. Although these agreements are not legal binding yet they can serve as references to assess the level of commitments on both side.**

see below for Venn Diagram for Gunkuru Wollof

Jahuru Mandinka

There are 10 small groups (societies) in the village, as mentioned by the people and all have different objectives. Two of the groups (VDC and PTA) are committees that help to coordinate and support programs related to village development and the school, respectively. Among all the groups highlighted, Sateh Kanibenq Kafo is recognized to be providing more services to the whole community in the form of cereal banking, savings and credit mobilisation, provision of communal labour and providing social support to members in need. **This group could provide significant support towards identification of first hand learners as well as the development of any agreement.**

YAMPI [one of the village group] is an agricultural group comprising of women only. The group which is affiliated to other similar groups in the country helps to promote farmer trainings for women in the areas of composting, rice and vegetable production as well as promoting other crops like sorrel, sesame etc. **It will be helpful if the project can learn more about the activities of this group and establish collaboration in order to share experiences through exchange visits to some of their other affiliated groups in other parts of the country. This will enable the project understand what works well in some areas and why.**

The other groups in the village such as Literacy group, Jokerr End am, Nodema kafo, Youth group, Toleh kafo and Dimba kafo all have different objectives and carries out activities to raise funds and support each other. Toleh and Dimba Kafos are said to provide entertainment to people in a form of songs or jokes. **These are good channels through which one can disseminate information in form of songs or theatre plays especially on positive achievements made. In short they can serve as local media to promote the project's activities.**

Outside institutions that work with this community are said to be nine in number, namely VATG, DCD APSO YAMPI, MRC, FORESTRY, GAWFA, HEALTH and EDUCATION. Among these institutions, VATG, DCD and YAMPI are single out in providing capacity building in a form of training people in vegetable gardening, composting, group management, literacy etc The rest provides research and medicine services and formal education to children all at barely no cost refund. GAWFA on the hand provided loans at high interest rate, which people continue to talk about.

Forestry Department to have started sensitising the community on community forestry concept, as there is a small forest far the community. **The project should gather enough from that department regarding the status and their plans. Considering the number of institutions that either works or visits this village, the project should be mind full of not creating a depending syndrome for the community, as they will always accept any opportunity that comes by.**

Toro Ba

This section was not completed by the PRA consultant, Boran Danjo!

Transect Walk

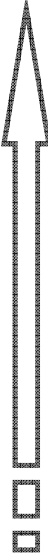
No analysis given by PRA consultant, Boran Danjo!

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see Transect Walk for Gunkuru Wollof, below

see Transect Walk for Toro Ba

TRANSECT WALK FOR GUKURU WOLLOF 2004

Direction of Walk



CATEGORIES OF OBSERVATION	Lowland Rice Fields	Groundnut Fields	Cous Fields with Scattered Trees	Kitchen Garden and Wild Grassland	Backyard Gardens
<p>Description of Agricultural Area</p>	<p>Upland rice, of an early maturing variety. Monocropped annually</p>	<p>Mechanically monocropped g/nut, with millet, sorghum, cous included in rotation. No tree cover. Post-harvest g/nut hay used as fodder</p>	<p>Small buffer of wild grassland, then monocropped cous. Rotation of early millet/g/nut/sesame/sorghum in area</p>	<p>Area used for tree nurseries due to proximity to water source. Pumpkin, bitter tomato, okra, eggplant, corn, cassava, hot pepper, never die, mango, malinga, baobab and cassia all reside in area</p>	<p>Backyard garden of Alaji Mbai, resident of Gukuru Wollof. Tomato, garden pepper, cassava, pumpkin, mimbi, maize, and paw paw and mango tree are resident.</p>
<p><i>Crop Production</i></p>	<p>*Yields declining since land was cleared of forest cover 30 years ago; decline accelerated as any remaining trees felled in recent years. Eucalyptus and mango trees considered, as they do not interfere with production. Their continued absence attributed to 'lack of knowledge' and belief that trees are detrimental to g/nut production. *Poor soil water holding capacity, lack of organic matter and poor fertility major limiting factors. Chemical fertilizer, manure application and cattle tethering</p>	<p>*As with other fields, yields steadily declining over time. However, here trees recognized as beneficial to cous. Efforts to plant trees negated by termites, which eat saplings before they are established. <i>Sax</i> plant (pronounced <i>sach</i> in English) grows freely in area, and offer a green manure possibilities as a tall, woody sapling. They may stand in as trees along borders of fields until actual</p>	<p>*Garden pepper is considered best suited to arid garden conditions, including tree shade. *The establishment of mango and banana trees has been attempted, but poor fencing prevents this. Tree species for live fencing are wanted, yet 'lack of knowledge and skill' are blamed for their continued absence.</p>	<p>Proximity to the compound allows for copious application of manure and thus incredible plant growth</p>	

	<p>strategies for fertility. *Sorghum and/or millet intercropped with g/nut in village, yet very seldom. Intercropping supported for its risk aversion properties; no mention made of its effects on soil quality.</p>	<p>trees become established.</p>	<p>Soil quality seems optimal. Plant residues remain in the soil, and the soil is amended by manure applications.</p>
<p><i>Soil Quality</i></p>	<p>*Water retention capacity is higher than outer fields, as garden is lowland and has some soil organic material. *<i>Dax</i> soil is easily compacted, sticks together and has better structure than other soils * Some areas of garden exhibit extreme dryness, cracking and hard panning.</p>	<p>Soil quality parallel to that of g/nut fields.</p>	<p>*Main limiting factors are poor fencing and lack of water. Local fencing materials are not strong enough, as quality fencing poles are no longer plentiful or accessible. No longer is there access to nearby bore hole in dry season, due its appropriation by neighbouring Fula ranchers. *There is sub-optimal usage of household organic materials in garden. Much material is still discarded as waste, though manure is still manually applied</p>
<p><i>Production Limitations</i></p>	<p>Area is swampy and relatively fertile. Is fairly sandy, yet enjoys relatively much more organic material than other soils in village. Neighboring grassland is unsuitable due to poor water retention.</p>	<p>*Major limiting factors are millipede, blister beetle and straiga weed. Chemical fertilizer applied to counteract straiga. Other strategies are tethering animals in the field (manure), early weeding with plough and uprooting before flowering. Pest problems perpetuated by monocropping, simple rotations and dearth of native plants or fertile soil to act as diversions or controls on pests.</p>	<p>*Insects do eat tomatoes in the gardens. However, their incidence and severity are much less than in other areas of village, likely due to high levels of crop diversity, plant vigor and soil health. A chemical insecticide is used, yet is effective for only 1-2 weeks at a time. *Fencing problems remain a concern, and constant vigilance of gardener is needed to protect crops.</p>
	<p>*Soil erosion severe. Channel erosion follows plough lines, and deposits sediment at edges of bordering rice fields. Extreme exposure and erosion leaves soils very sandy, dry, hard. Infiltration greatly diminished; overland erosion intensified. Stakes and sandbags placed in channels to reduce erosion, yet ineffective.</p>	<p>*Chemical fertilizer too costly. G/nut hay transported out of fields to feed cattle in village center, and no efficient method for 'harvesting' resultant manure for application to field. Horse carts lacking for the transport of manure. Hay cannot be left in fields for grazing for fear of theft. *Crops very prone to insect attack. Poor soil fertility and lack of other native foods (e.g. trees) blamed. Termites especially problematic. Chemical <i>Groounox</i> is applied, at D80, to termite mounds. Use of ploughs for weeding g/nut precludes intercropping in fields. Intercropping also not practiced near village center, as roaming animals may devour intercropped plants.</p>	<p>*Has weed problems, especially <i>bara</i> weed and <i>anaro</i> weed. First weeding is by plough; subsequent two weedings are manual. Uprooted grasses tossed out of field. *Trees as bird habitat and shade providers considered detrimental to productivity.</p>

<p><i>General Comments</i></p>	<p>*Overland flow from nearby land of higher elevation deposits sand walls at border of rice field, diverting runoff into rice and limiting soil water and thus growth potential.</p>	<p>*Crops spaced widely, due to poor soil fertility. Land deprived of tree cover. Soil <i>greatly</i> exposed to the elements. Production cannot increase unless and until the soil quality is restored.</p>			<p>The garden of Mr. Alaji Mbai's neighbour was examined for its plentiful paw paw trees and seedlings. This man's strategy was to rear seedlings in his back yard, especially in the toilet section, which is relatively well protected by the house and backyard privacy fencing. Seedlings well established here can be planted in the backyard for fruit, or transplanted to nearby fields for agro-ecological production.</p>
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TRANSECT WALK FOR TORO BA

<i>Categories of Observations</i>	<i>Outer Fields</i>	<i>Inner Fields</i>	<i>Village</i>	<i>Lowland Intermediate Upland</i>	<i>Rice Fields</i>
<i>Land Use</i>	Groundnut and early millet Animal tethering	Groundnut, early millet, maize, sesame, cowpea, sorghum and sweet potato Animal tethering	Livestock Settlements Health center Say care center Pumps and open wells Cowpea, maize, pumpkin, vegetables	Maize, groundnut, early millet, garden, cassava, fruit trees, sesame, cattle tethering, cowpea	Maize, rice, garden
<i>Soil Type</i>	Sandy loam	Sandy loam	Sandy Sandy loam Loam	Loamy soil	Loamy Clay loam
<i>Vegetation</i>	Shrubs grasses and a few trees Seed dressing Banneh, golombeh Netch Bodii Erii Kokii Kokoliid	Shrubs, grasses and a few trees Mbuleyii Checkeyii Sangamarr Jabbii Chalal lii Buski	Move trees and grasses Mboki (Baobabs forest) Fruit trees Mango Banaba Yamyam Moringa	Shrubs, grasses and a few trees Barkuri Mahogony	More trees and grasses Koili Mbukeyii Nelbii Nawbanni Talii KruJanJan
<i>Problem</i>	Poor soil fertility Striga infestation Erosion (gully formation) Bush pigs Blister beetles	Poor soil fertility Bush pigs Striga infestation Erosion Culturing of trees Ndatuhan and Blisters	Erosion (gully formation) Food trees dying because of termites	Erosion Low soil fertility Bush fire Droughts (disappearing trees)	Pest infestation Termites Monkeys Birds Erosion Bush pigs Salt intrusion and salinity

Gender Analysis

Toro Ba

To effectively design and implement development programmes with the community, it is important to identify and understand gender roles that exist in the community and their implications. The gender analysis conducted in Toro Ba looks at men and women's role in agricultural production and household activities as well as the level of control and access they have to various resources. It is interesting to note that apart from rice production, which is only done by small group of women due to limited rice growing area caused by salinity, they also grow vegetable, but most other field activities are done by men. It was confirmed that women do cultivate their own groundnut farms but all operations required in that field are done by the men. This could have both positive and negative impact on women's status in the community. Positively it will enable women to spend more time on other domestic tasks including child caring. Negatively it could reduce women's decision-making power to the realm of the domestic tasks, thus enabling them to be more like recipients of information or dependent on men for most issues concerning the larger village. Women in this community don't plant tree but rather men only. There are only few trees planted in backyards and in the fields in recent years as shown in the resource map and in the transect walk. **The project should work with the community to identify some motivated women who will be willing to start some of these activities for others to emulate.**

Regarding control of resources, women only control livestock they own as well as produces from their farms and some degree of decision on the type food to cook daily. **This means that if project is to allocate any resources to first learners, agreement should be made on how women will be in control of theirs.**

see below for Gender Analysis, Toro Ba

Gonkuru Wollof

This community being an inland settlement is not exposed to varieties of opportunities that could enable men or women to have specific agricultural activities different from men. In this village women cultivate the same crops like men, even in the small valley where they grow up land rice. Environmental management is not highly practiced in this community, as observed during the transect walk because there is not much collaboration between the cattle owners who are largely from near by communities and the villagers. This largely affected vegetable production as the borehole used for cattle drinking is just by the garden site and cattle always like to find their ways into the garden during the dry season to eat green vegetables. According the community, the matter went up the district authority level but they did not succeed in influencing the authority to make cattle owners control their cattle during the dry season. Women only grow rain season vegetables that means under utilising the site.

Other main activities undertaken by women is domestic work especially food processing, child care and water collection as there are no milling machines in the area and the village has only one hand pump. Women don't control land but they can access to it except in the rice fields, which they always find it difficult to borrow from owners in other villages. **The project can largely promote upland rice cultivation in this village by just providing improved short duration rice variety and some technical advise to the community.**

Jahuru Mandinka

The gender roles in this community show that women concentrate more in the lowland and the garden than growing other field crops. However some men do join their wives to transplant their rice seedlings, harvest and transport them home. Both sex expressed their efforts to plant trees without any success. This, according to them, is because the village and its surroundings are saturated with neem trees and termites, which negatively affects other trees, especially samplings.

Women only own and control some small ruminants, and produces from their rice fields and gardens. They only own most of their rice fields as long as they remain married in the family. Although the community said there is a new site that was recently reclaimed and any one allocated a plot there belongs to that person, the area is small compared to women's normally-cultivated areas. However this is a significant

move towards making women rightful owners of the land they cultivate. Both sex agreed that women only make limited decision regarding household issues, which need to be consolidated and expanded through awareness creation, and targeting them for some critical issues to take decisions. **In this community, women don't own or control farm implements and as a result they only access them last when men are finishing their own operations. If such resources are to be provided, the project should develop mechanisms to ensure that women and men have equally access to them at time they all need them.**

Seasonal calendar

Jahuru Mandinka

The seasonal calendar looks at field crops grown and vegetables and their time of operations including some of the problems encountered. The calendar indicates types of activities carried in each quarter of the year, and the hungry period for these farmers. Here women grow rice in deep flooded areas, which matures late and gets harvested mostly in the month of March while in June they start the land preparation again. The operations of other field crops mainly cultivated by men, ends in December or at most in January. This indicates that men have more time to relax than women. Jahuru swamps are just by the river side, and that area gets salt water during the dry season which is pushed away by fresh water in mid rain season to allow rice planting to start.

Gardening being the second main activity carried out by women, stretches from December through to April/May. However the cultivation of both rice and vegetables has problems as highlighted in resource map and transect. In the rice fields young transplanted rice seedlings are eaten up by small fish which is difficult to control as the Fisheries policy prohibits any one to catch such small fish. The garden on the other hand has water, security and pest problems. The fence lacks strong sticks as such are not available in the area while the number of wells and quantity of water in the wells are not enough for effective gardening. **As these activities are many and vary, the project can consider linking their training schedules to periods when farmers are about to carry out those activities so that the ideas remain fresh in their minds.**

Termites and other pests seems to discourage many villagers to do planting especially trees, the project may consider working with few motivated individuals to adopt strategies [biologically] that can control termites. It seems if any idea of such succeed, the community are willing to plant more trees around the village.

Toro Ba/Gunkuru Wollof

Field activities in both communities' start and end at the same time except in the rice fields. Toro Ba and Gunkuru Wollof grow upland rice in slightly varied moisture conditions and harvested within the same period. The three communities belong to different tribes [Toro Ba –Fulla, Gunkuru –Wollof and Jahuru –Mandinka] that have some effect on their agricultural practices. The first two are not traditionally big rice growers but Toro Ba being a Fulas is known for grazing animals.

see below for Seasonal Calendar, Toro Ba

Seasonal Calendar, Toro Ba

CROP	DARUNDAY			CHEDU			XESELE			NANGU		
	Rogop (September)	Yaway (October)	Corr (November)	Xumtorando (December)	Sowtorando (January)	Tabaske (February)	Xaram (March)	Ndigi (April)	Gamo (May)	Nirowgambo (June)	Minchinrowgambo (July)	Nuerowkorka (August)
<i>G/nut</i>	Growing & weeding	Harvest	Harvest	Heaping	Separate hay from shell	Market	Market	Collect hay	Shelling	Clearing	Planting	Growing & weeding
Cous	Growing & weeding	Harvest	Pounding	Pounding	Pounding	Pounding	Pounding	Pounding	Pounding	Clearing	Planting	Growing & weeding
Maize	Weeding	Harvest	Harvest	Pounding	Pounding	Pounding & Mechanical pounding	Pounding	Pounding	Pounding	Clearing	Hoeing & sowing	Weeding
Rice	Weeding	Harvest	Harvest	Pounding	Pounding	Pounding	Pounding	Pounding	Pounding	Clearing	Hoeing & sowing	Weeding
Garden	---	---	Nursery & watering	Transplanting	Watering	Watering	Harvest	Harvest	---	---	Planting	Planting

Teed Line

The trend line in the communities looked at some of the important changes that took place in the communities which has some effects on their living standard and the environment. The group analysed what happen in each of the identified areas within 40 years period that the group can remember. The areas identified by the group are: **Rain fall, Forest cover, Food security situation, Population, Soil fertility levels.**

Rain fall

According both communities, the amount of rain fall that use to come 40 years ago compared to now is almost within the range of 10 to 5 or even less. During those days, use of farm implements was almost zero and families cultivate only small areas with lot of places left to fallow. There use to be lot stagnant water at many places but now almost every thing flows down to the low land which is as a result of erosion. In those days the types of crops grown cannot be cultivated now as they need lot of water.

Forest cover

All the communities confirmed having thick forest around their environment in the past and people harvest lot forest products almost through out the year which reduces dependency on food being cooked at home. All these forests were gradually being encroached [through various activities] resulting to severe lost of forest cover. The average scores of the three communities are a score of 10 (representing forest cover 40 years ago) relative to a score of 2 for the present day, which means the forests are seriously depleted. During those times, fire wood, fence poles etc can easily be available. According to the people, some important trees like mahogany started disappearing. Although some efforts are on to plant trees, the survival rates are small and many of the trees planted are fruit trees and not indigenous forest trees. It is important for the project to know that enough efforts towards promoting tree planting should be geared towards fruit or other multipurpose trees, and not just (or primarily) native trees.

Food security situation

According to the communities, there was food security problem both in 40 years ago and now. The reasons for these vary; 40 years ago farming was done using small traditional implements which largely limits their area of cultivation. Presently implements are available that can enable one cultivate large area (e.g. horse plow) but, largely because of the use of these new implements, the soils have lost their fertility and, as trees have been felled, annual rain fall has reduced drastically.

Today few families produce enough food to take them through to nine months without having to buy supplementary food (e.g. a sack of rice). Even inland villages that do not traditionally grow rice like Gonkuru Wollof now have to be buying lot of rice to feed the families. This is why this community started cultivating upland rice which they are eager to expand. It is also the reason why t hey must give such fixed concentration on cash crops such as groundnut, despite the fact that the crops fetch a poor price and have a limited market. The transects indicates more ground nut fields than other cereals, which means there is more concentration on cash crop than food crop production. The project in partnership with NARI should expand the NORIKA rice variety to these communities as it is early maturing and high yielding.

Population

This sector is growing fast as the group participants placed 4 stones (for a relative score of 4) to represent population pressure 40 years ago, and they placed 10 stones to score the present day. The group members attributed this increase in population pressure to the cultural marriage system, which shows girls getting married early and have their first child early. Health care system has improved as well as people's knowledge about their health, so people also live longer now. Polygamy (having more than one wife) is another factor explaining the increased population pressure. Lastly, there is also the factor of new people from neighbouring countries coming in search of peace and better farming land.

Soil fertility levels

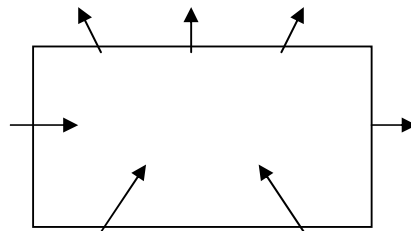
This is the major concern to the people in both communities over other areas mentioned above. As subsistence farmers, they depend on rain season farming to earn their living and sustenance. Many that grow crops cannot afford to buy enough fertiliser for application [they emphasis], and therefore only continue to cultivate the same area every year. In their analysis, they gave an average score of 10 stones to score soil fertility 40 years ago relative to 2 stones for the present day's soil fertility score. This shows how serious the situation is now, which according to them seriously affects crop yields and overall food security levels of the families. They said some of the striga problems happening now are due to poor soil conditions.

see Trend Line, Toro Ba, below

FLOW MAP

Not completed by PRA consultant, Boran Danjo!

Each community drew the flow of nutrient in and out of a sample groundnut plot to know what activities they think they do that remove or put in nutrient into the field. This is essential, as people need to know the conditions of their soils to determine what activities to be carried to continuously improve the fertility levels. Below is a sample farm showing the flow of nutrient in and out as analysed by farmers. This shows that there is great need for awareness creation to enable farmers know all factors responsible for in and out flow of nutrients on a farm.



PROBLEM IDENTIFICATION AND RANKING

The PRA adopted a process of discussing problems emerging from the conversations of each PRA tool in order to know to what extent these problems areas are affected and how these affects participants' lives. These problems were written/drawn on flash cards by participants to enable them to represent and record the discussion and be able to present during the plenary. Through the discussions, the causes of the problems, strategies they use and linkages to other problems are discussed. As the participants were divided into three groups to make data collection easier, all groups inadvertently identified certain common problems, and so there is some overlap in each groups' identified problems. The degree of overlap may show the significance the community attaches to the problem in question, or how serious these problems affect them.

Later, during the large group plenary where the tree groups had come together, participants first identified broad problem categories with which they would categorise their individual problems. In the three communities these broad problem categories happened to be almost the same (e.g. environment, forest cover, food security), as the problems are similar across all communities. The broad problem categories identified by the three communities are shown in the table below. Categories are in no particular order/ranking.

**Broad Problem Categories Identified by
Participating Communities during Plenary**

<i>Jahuru Mandinka</i>	<i>Gonkuru Wollof</i>	<i>Toro Ba</i>
Safe Drinking Water	Safe Drinking Water	High Interest Rate of Loans
Gardening	Gardening	Gardening
Environment	Environment	Environment
Crop Production	Crop Production	Crop Production
Animal Husbandry	Animal Husbandry	Livestock Husbandry
Domestic Activities	Women's Workload	Women's Workload
Communication	Communication	Difficult to Conduct
Out Side Project Mandate	Education	Community Meetings
	Out Side Project Mandate	Out Side Project Mandate

These simple, broad problem categories formed the basis for organizing the numerous individual problems already identified during the small group PRA sessions. This was the primary focus of the large plenary: to identify broad problem categories, and then to categorise the many individual problems already identified during the PRA sessions. The broad problem categories and their respective individual problems (in no particular order) are presented below for each community.

Jahuru Mandinka

- ❖ Safe drinking water
 - No problem identified in this area
- ❖ Gardening
 - Insect infest vegetables
 - Lack of reliable markets for vegetables
 - Inadequate water supply in the gardens
 - Lack of proper security for the garden
- ❖ Environment
 - Salt water intrusion into the rice fields x 3 groups
 - Inadequate farm land for agricultural purposes
 - Termites affects young tree seedlings
 - Soil and water erosion
 - Deforestation
 - Limited firewood
 - Drought resulting to big trees dieing
 - Difficulty to propagate fruit trees
- ❖ Crop production
 - In adequate knowledge and skills in improved production
 - Lack of improved early maturing improved seed varieties
 - Low soil fertility
 - Difficulty to transport compost to the fields
 - Insufficient farm implements
 - Pest and diseases that attacks crops

- ❖ Animal husbandry
 - Lack of proper livestock management practices
- ❖ Domestic activities
 - Heavy workload on women
- ❖ Communication
 - No problem identified
- ❖ Outside project mandate
 - Destruction of farms by bush pigs
 - Storage facility
 - Difficulty to access rice fields
 - Lack of primary health care facility
 - Inadequate drinking water facility
 - Theft of cattle
 - Inadequate food processing facility in the village
 - Lack of market

Gonkuru Wollof

- ❖ Safe drinking water
 - Water collection points far away from some people
- ❖ Garden
 - Lack of proper fencing for the garden x 3
 - Lack of adequate market outlets for vegetables
 - Pest and insects affects vegetables
 - In adequate water in the garden to water vegetables
- ❖ Environment
 - Trees are difficult to survive due to termites
- ❖ Crop Production
 - Poor soil fertility x 3
 - Pest and disease infestation x 3
 - In adequate farm implements x 3
 - Striga infestation
 - Lack adequate skills to adopt alternative methods to fertilize the soil.
 - Low crop yield
 - Lack of different seed varieties to diversify crop production
 - Upland growing area too small for the village
 - Difficulty to borrow rice field from neighbouring villages
 - Limited carts to transport manure to the fields
- ❖ Livestock husbandry

- Stray animals due to inadequate feed them
- Many animals are not healthy
- ❖ Women's workload
 - Heavy and many workload on women
- ❖ Communication
 - Limited carts to transport produce to the nearest market
- ❖ Education
 - No problem was identified in this area as there is a primary school in the village.
 - Lack of forest in the area
 - Difficult to get fire wood for cooking
- ❖ Out of project mandate
 - Pigs, monkeys and pest attacks crops
 - Lack of sufficient land area for crop production
 - Lack of spare parts for the hand pump
 - Inadequate learning space and chairs
 - Difficulty to access a borehole to expand vegetable gardening
 - GAWFA's high interest rate
 - Land tenure system

Toro Ba

- ❖ High Interest Rate
 - Not recorded by PRA consultant, Boran Danjo!
- ❖ Garden
 - Stray animals intruding into the garden
 - Lack of good fence materials
 - Pest and diseases
 - Inadequate vegetable seeds
 - All vegetables mature at the same time
 - Insufficient water in the garden
 - Termites
- ❖ Environment
 - Soil erosion
 - Deforestation
 - Salt water intrusion into the rice fields
 - Termites
 - Depleted forest products
 - Lack of firewood
 - Lack of fodder for animals
 - Low and erratic rainfall
 - Bush fires

- ❖ Crop production
 - Striga infestation
 - In adequate farm implements
 - Pest infestation especially blister beetles
 - Low soil fertility
 - Low crop yield
 - Weeds
 - Termites
 - Lack of early maturing improved seeds
 - Lack of means to transport manure to the fields

- ❖ Livestock Husbandry
 - Not recorded by PRA consultant, Boran Danjo!

- ❖ Women workload
 - Heavy workload on women

- ❖ Difficult to Conduct Village Meetings
 - Not recorded by PRA consultant, Boran Danjo!

- ❖ Outside project mandate
 - High cost of medicine for livestock
 - Wild animals damage corn fields
 - Monkeys
 - Lack of fishing materials
 - Reduction in fish population
 - Bush dogs
 - Bush pigs

Analysis of Problem Categories and their Respective Individual Problems

Looking at these problems across the three communities, one can observe great similarities on their environmental and crop production constraints. Both communities indicated deforestation as a major problem, which aggravated soil erosion that greatly affects agricultural production. Both communities expressed soil fertility depletion as a major problem that affects crop yield and largely result to food insecurity. This was further evident in both transects and flow maps. According to the communities, efforts to replenish soil nutrient are minimal due to limited resources. Most of these are in form of cattle tethering, transporting some manure and broadcasting some chemical fertilizer. Fallowing which use to be a common practice no longer happens due various factors example increase in population, increase in farm size due technology adoption etc.

Certain problems may be unique to some areas example Toro Ba expressed lack of meeting as a problem. **Although other villages did not express it as a problem but this is a concern that should be taken up seriously with all communities. One strategy some development partners adopt is target group approach. This is rather more focus and mobilizing such a smaller number becomes easier.**

The problem category “Outside the Project Mandate” was created and discussed to enable communities to understand from the very beginning that some of the problems they expressed couldn’t be funded by the project because they did not fall within the project objectives. This is important, as it minimized the raising of people’s expectations on issues that cannot be financed by the project.

In each community, the three broad problem categories having the most individual problems within them were selected during the plenary. One of the three broad problem categories was given to one of three small working groups, and the groups ranked the problems inside their respective problem category in terms of priority.

After this, working with the three most important individual problems of their respective problem category, the three small groups used flashcards to further develop action plans for the villages by sorting each individual problem’s causes and solutions next to the problem itself, thereby creating “Problem Trees”. This process of prioritising problems, their causes and their solutions made use of simple ranking, such as with stones. The table below shows the priority problems per village;

The Three Problem Categories Having the Most Individual Problems Within Them

<i>Jahuru Mandinka</i>	<i>Gonkuru Wollof</i>	<i>Toro Ba</i>
Environment Crop Production Garden	Crop Production Garden Environment	Crop production Environment Women’s workload

The Three Problem Categories, Their Respective Problems, Causes and Solutions, in Order of Priority, for each Community

<i>Jahuru Mankinka</i>		
<i>Category: Environment</i>	<i>Causes</i>	<i>Solution</i>
Problem: Deforestation	<ul style="list-style-type: none"> • Bush fire • Felling of trees without replacement • Inadequate rainfall • Expansion of farmlands • Over grazing • New settlement 	<ul style="list-style-type: none"> Implement community forestry program • Plant more trees • Promote live fencing • Protect and allow more trees to grow • Adopt better farm management than expansion • Adopt intensive livestock management
Problem: Termites	<ul style="list-style-type: none"> • Improper manuring • Lack of adequate soil moisture 	<ul style="list-style-type: none"> • Adopt proper manuring • Use neem tree power as seed dressing • Introduce some crops that cover the soil to retain moisture for long
Problem: Salt water intrusion	<ul style="list-style-type: none"> • Low rainfall 	<ul style="list-style-type: none"> • Construct dikes • Plant salt tolerant trees to minimize flow of salt water

		<ul style="list-style-type: none"> Plant salt tolerant rice varieties
	<ul style="list-style-type: none"> Close distance to the river 	
<i>Category: Crop production</i>	<i>Causes</i>	<i>Solutions</i>
Problem: Low soil fertility	<ul style="list-style-type: none"> Continuous cultivation on the same land without adding enough manure 	<ul style="list-style-type: none"> Adopt better farm management practice – leaves weeds to decompose on the farm
	<ul style="list-style-type: none"> Early clearing of the farms before cultivation 	<ul style="list-style-type: none"> Use of compost
	<ul style="list-style-type: none"> Increase in water and soil erosion 	<ul style="list-style-type: none"> Adopt contour farming techniques
	<ul style="list-style-type: none"> Continuous removal of weeds and other matter without making them into compost. 	<ul style="list-style-type: none"> Adopt better agronomic practices
<i>Category: Garden</i>	<i>Causes</i>	<i>Solutions</i>
Problem: Inadequate security of the garden	<ul style="list-style-type: none"> Lack of strong fence poles Women provided the poles that are not strong because the forest is far 	<ul style="list-style-type: none"> Buy strong poles from Kuntaur area Mobilize community contributions Promote live fencing
Problem: Inadequate water	<ul style="list-style-type: none"> The present two wells were dug during the rains when the water table was high Now all the wells dry at the pick of the garden season 	<ul style="list-style-type: none"> Re-dig the two wells to get more water
Problem: Pest infestation	<ul style="list-style-type: none"> Pest attacks vegetables as there are no other greens for them to eat 	<ul style="list-style-type: none"> Introduce local pest control methods as repellent.
Gonkuru Wollof		
<i>Category: Crop production</i>	<i>Causes</i>	<i>Solutions</i>
Problem: Soil infertility	<ul style="list-style-type: none"> Continuous cultivation of the same land Limited use of compost due to transportation difficulties. Deforestation 	<ul style="list-style-type: none"> Cultivate limited farm lands and manage it effectively Provide carts to transport compost to the fields Plant trees especially nitrogen fixing species
Problem: Insufficient farm implements	<ul style="list-style-type: none"> Lack of enough capital to buy implements needed. Low income from farming 	<ul style="list-style-type: none"> Provide farm implements to the community especially the women Introduce high yielding seeds Adopt better farm management techniques
<i>Category: Garden</i>	<i>Causes</i>	<i>Solutions</i>
Problem: Lack of proper security	<ul style="list-style-type: none"> The first garden fence was washed away by the rains 	<ul style="list-style-type: none"> Provide strong poles and barbed wire to repair the fence Plant live fencing trees around the garden fence
Problem: Pest infestation	<ul style="list-style-type: none"> No other greens other than 	<ul style="list-style-type: none"> Introduce and train women on local

	<ul style="list-style-type: none"> vegetables during the dry season Limited knowledge to prevent or control pest 	pest control methods
Problem: Limited market outlets	<ul style="list-style-type: none"> Almost all vegetables in the area mature at the same time There is only one reliable market located in Kaur 	<ul style="list-style-type: none"> Diversify vegetables and introduce staggered planting
<i>Category: Heavy workload on women</i>	<i>Causes</i>	<i>Solutions</i>
Problem: Difficulty to process cereals into food	<ul style="list-style-type: none"> Lack of food processing machines 	<ul style="list-style-type: none"> Provide some food processing machine for women
Problem: Difficulty to collect fire wood	<ul style="list-style-type: none"> The forest near the community being depleted The only forest available to the community is far away 	<ul style="list-style-type: none"> Introduce and train women on better usage of fuel wood
Problem: Water fetching	<ul style="list-style-type: none"> Only one hand pump exist in the village Many women queue at the Same time to fetch water 	<ul style="list-style-type: none"> Although providing additional pump is outside the project's mandate, if other areas are addressed, women can spend more time to collect water
<i>Toro Ba</i>		
<i>Category: Crop Production</i>	<i>Causes</i>	<i>Solutions</i>
Problem: Poor soil fertility	<ul style="list-style-type: none"> Water and erosion Continuous cultivation of the same land without required fertilizer Soil in certain areas could have some soil problems Lack of trees 	<ul style="list-style-type: none"> Plant wind break trees on farm boundaries Adopt effective farm management to allow some areas to fallow Collect and dispose all materials that could affect the soil Use of organic manure on the farms Plant more trees
<i>Category: Environment</i>	<i>Causes</i>	<i>Solutions</i>
Problem: Deforestation	<ul style="list-style-type: none"> Increase in farm lands Use of farm implements which affects roots of trees Increase in population Indiscriminate felling of trees Bush fires 	<ul style="list-style-type: none"> Adopt effective farm management rather than cultivating more land with small yields Protect areas not being cultivated to allow regeneration and protect the forest Protect the little forest area from bush fires Put in place regulations and enforce them
<i>Category: Heavy workload on women</i>	<i>Causes</i>	<i>Solutions</i>
Problem: Unspecified, Complain to Boran Danjo!	<ul style="list-style-type: none"> Greater gender task/roles for women Cultural belief 	<ul style="list-style-type: none"> Support each other in carrying out responsibilities Provide labour saving devices for women

Analysis

The action plans of these three communities are almost similar as their top two priorities are crop production and environmental improvement. These two problems are linked and any intervention towards increasing crop yields requires the improvement in which that crop is grown.

In Jahuru Mandinka, people kept on emphasising the problem of termites and neem trees as the biggest obstacles towards planting trees within their environment. The communities clearly understanding that the continuous poor performance of crops depends on the deteriorating environment as indicated in their trend lines.

Gardening future within the priority problems in Jahuru Mandinka and Gonkuru Wollof and the later only do it during the rainy season (if you don't understand this sentence, complain to Boran Danjo!). In case the project considers supporting the gardens, it will be necessary to contact other partners that initially supported the communities, especially in the case of Jahuru Mandinka.

In Toro Ba, crop production is considered the number one problem and interestingly in this community women get their own land for cultivation but men do all the work for them. This is unique compared to other communities and enables the project to develop strategies with women as the first recipients of information so that they are able to innovate themselves.

In Toro Ba although workload on women was expressed as a problem, there is a cereal milling machine in the village and, as mentioned earlier, women don't work on the farms during the rainy season, but men do. Therefore women only work in the rice fields, garden and at home.

Short comings

The PRA was conducted within three days in each village, **which** was rather a limited period for effective discussion to generate all information. In all three communities, target groups have to stay with the PRA team for long hours to complete their discussions.

There was no time to meet the entire village to present to them what was discussed in the three days of the PRA. This was necessary as the community needs to be informed about the information collected before the PRA team leaves the community. Although 40 PRA participants (the number of participants in each of the three communities) is a large number, efforts should be made to present the findings to the whole village.

The project staff should all be appointed before the PRA so that they all participate in the data collection.

Recommendations

A lot of suggestions were made in various tool analysis which are important for the project to consider during implementation. In addition, the project need to;

- ❖ Develop and sign Community Resource Management Agreement [CRMA] which will spelt out the responsibilities of both parties in implementing a program. It will also outline the responsibilities of men and women which will enhance equal access to resources provided by the project. Although these documents are not legal binding, yet they serve as references to assess progress made on the agreements.
- ❖ Although problems related to people attending community meetings was expressed in Toro Ba, this could have an effect on both communities. The group cohesiveness demonstrated in Gonkuru Wollof is a good example to be encouraged by the project.
- ❖ Some Organisations have ever tried to implement appropriape cooking stoves with communities and the project needs to learn about what types were demonstrated and the success rates. This enable the project to properly design what ever method it is trying to promote.
- ❖ Any cooking stove to be promoted for adoption should be able to use different local resources including caw dumb.
- ❖ The project may consider using social drama groups [were they exist] to promote it's activities or traditional groups that have potential.