

ADPP Narrative Progress report No. 1

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**Jatropha oil for local development
in Mozambique**

Biofuel for development and Communal Energy Self-Supply



January 2007 – June 2007

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1 Introduction

The main objective of the 'Jatropha oil for local development in Mozambique' project is to improve the self supply of energy of community members in the Quirimbas National Park (QNP), Cabo Delgado, Mozambique and in doing so, assist their income situation. Currently, farmers within the national park are isolated from many services, are subject to severe difficulties in farming due to conflict with the parks wildlife and have few income generating opportunities. While not much is known about the effects of Jatropha cultivation in Mozambique, the climate and soil appears well suited to its growth. Additionally, its low maintenance characteristics lend itself as an easy alternative source for energy for local subsistence farmers without compromising their primary need to produce food crops.

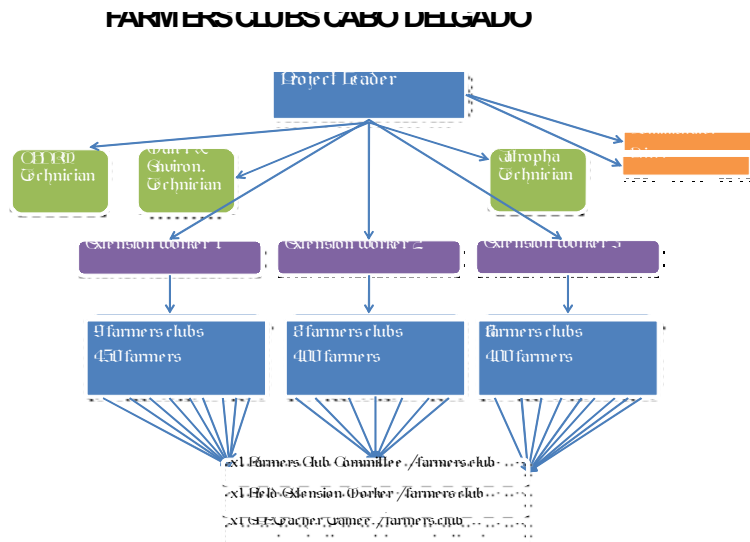
The first stage of the project is aimed at establishing the cultivation of jatropha within 25 communities within QNP. The project is still in its early stages and timing with respect to the agricultural calendar has meant that only few activities have been undertaken to date.

This report overviews the progress of activities outlined for the first six months of the project, January – June 2007, and provides a reassessment of the activity timetable based on practical judgements from the field.

2 Organisation

The 'Jatropha oil for local development in Mozambique' project is being implemented through 'Farmers Clubs, Cabo Delgado', a project structure recently established as part of a farmers club 'Food for Progress' project funded by USDA (see figure below).

Figure 1: Organisation of Farmers Clubs, Cabo Delgado



Essentially, the project operates through 25 farmers clubs equally dispersed between the 5 districts of Quirimbas National Park – Meluco, Quissanga, Macomia, Ancuabe and Pemba-Metuge (see Table 1 below for the specific farmers clubs). With 50-60 members on average, approximately 1,250 farmers' club members are directly taking part in the project.

Table 1: *Farmers Clubs located within Quirimbas National Park, Cabo Delgado*

Meluco	Quissanga	Macomia	Ancuabe	Pemba-Metuge
Sitate	Mahate	Majoco	Metoro	Nacuta
Pitholha	Ntessa	Nova Zambezia	Ntutubue	Tratara
Nssemuco	Cagembe	Litamanda	Ngeue	Nanlia
Mbada	Namalico	Xinavane	Nanjua	Miese
1 de Maio	Napuda	Licangano	Sede	Namiteue

Each farmers club is established in the locality of an ADPP Escola Professores de Futuro (EPF) Primary School and consists of a Farmers Club Committee (FCC), Field Extension Worker (FEW) and the members themselves, both men and women, who have voluntarily agreed to be part of the program. To encourage commitment, members of each club have been encouraged to develop their own constitution to provide a framework and guidance for member activities.

Members of the club congregate every Saturday (situation and seasons permitting), to receive training from an EPF Teacher Trainee (TT) on various subjects within the general EPF program, including jatropha cultivation, but primarily related to sustainable agriculture. The Field Extension Worker (FEW) appointed for each club is the main point of contact for receiving more specific technical training from ADPP and they in turn pass this knowledge onto farmers within the club and facilitate the process of community planning for use of local resources.

In terms of project staff, the project technician (appointed, but not due to start until end July) will specialise in the cultivation of jatropha including the development of fuel production (training and implementation). This technician will move around freely between the clubs to give training and provide ongoing technical support, advice and guidance to farmers. The extension workers (EWs), in contrast, are specifically linked to certain farmers clubs and are responsible for overseeing and monitoring the smooth functioning of their clubs. Two EWs are responsible for eight clubs each (400 farmers) and one is responsible for nine (450 farmers). They play a key role as a point of contact, visiting the clubs ideally on a fortnightly basis to provide technical assistance, give training, encourage new ideas, support and monitor the teacher trainee, support and monitor progress of the farmers, communicate and mobilize both farmers and local leaders and link farmers to markets.

This is the overall structure through which the jatropha project is being organised and implemented.

3 Progress per expected main result

3.1 Expected main results at end of project

Twenty five Mozambican rural communities will produce jatropha seeds sustainably for energy use on at least 250 ha.

3.2 Main activities for year 2007

- 1.1. Select 25 interested farmers clubs (FCs)
- 1.2. Train 25 EPF teacher trainees, 25 field extension workers as community mobilisers on jatropha cultivation and general environmental awareness
- 1.3. Conduct 250 household surveys and establish baseline
- 1.4. Make 50 wells and install rope pumps for irrigation of nurseries
- 1.5. Provide seeds and give training to farmers to start 25 nurseries
- 1.6. Sensitise and train 250 farmers to start cultivation of Jatropha
- 1.7. Plant seedlings and directly seeding plots of 10 - 20 ha at each Farmers Club
- 1.8. *(Not for 2007)*
- 1.9. Conduct annual field days, planning & review meetings and a participatory end of project evaluation
- 1.10. Prepare and set up 25 on-farm jatropha research plots of 1 ha
- 1.11. Monitor jatropha research plots

Details of the project progress based on these main activities are listed in the following table.

Table 2: ADPP FARMERS CLUB ACTIVITY RESULT ANALYSIS - Biofuel for Development and Communal Energy Self Supply, 2007

Main activities for whole year 2007	Planned results up to 1 July 2007	Actual results up to end June 2007	Variation	Explanation of variation, problems encountered. Solutions proposed	New estimate of results per end Oct 2007
1. 25 Mozambican rural communities producing jatropha seeds sustainably on at least 250 ha for energy use					
1.1	Select 25 interested farmers clubs (FCs)				
	- Meluco	5 clubs established	-	-	-
	- Quisanga	5 clubs established	-	-	-
	- Macomia	5 clubs established	-	-	-
	- Ancuabe	5 clubs established	-	-	-
	- Pemba-Metuge	5 clubs established	-	-	-
1.2	Train 25 EPF teacher trainees, 25 field extension workers as community mobilisers on jatropha cultivation and general environmental awareness				
	- 25 Teacher trainees (TTs)	TTs received an introduction to the project in April.	No variation, main training scheduled for November.	-	-
	- 25 Field extension workers (FEW)	It was intended that all 25 FEWs were to attend a general training of several days in May - mainly to re-introduce the content and aims of the project.	Only 5 FEWs attended a specific training on establishing research plots rather than 25. No short general training was held in May.	It was decided that only 1 farmer from each district need establish a research plot. Similarly, both TTs and the project EWs were briefed to speak with the farmers clubs about the project as part of their duties in the field - this was to be the main aim of the first training session. The main general training has been scheduled for Aug/Sept - a closer time to farmers planting season to ensure they retain more of the information imparted.	FEWs will have received their first main training on jatropha cultivation.

Main activities for whole year 2007		Planned results up to 1 July 2007	Actual results up to end June 2007	Variation	Explanation of variation, problems encountered. Solutions proposed	New estimate of results per end Oct 2007
1.3	Conduct 250 household surveys and establish baseline	-	-	No variation, scheduled July, August		
1.4	Make 50 wells and install rope pumps for irrigation of nurseries	Commence fixing and building at least 1 well in each farmers club commencing June.	Made a survey of current well and pump situation in May and made preparations for improving them.	Did not commence building new wells in June, however did begin making improvements to existing wells and pumps by the end of June.	In many places it was still too early to begin building new wells. Additionally, training was held for ADPP staff regarding well building and pump making in the first week of July. Now they are in a better position to choose better locations and provider better overall assistance.	New wells will have been built and pumps installed in the majority of the clubs.
1.5	Provide seeds and give training to farmers to start 25 nurseries					
	- Set-up nursery at EPF	Established jatropaha nursery at EPF.	Only minimal nursery established.	Nursery small and impermanent.	Problems with water in Bilibiza have made it difficult to select a permanent location and prolonged the establishment of more plants for transplanting before the rainy season. The intention is to try borehole drilling, for the well, however we must wait for resources for this. Additionally, discussions are still underway as to who will be the main caretakers of the nursery.	Found a permanent spot for the nursery with well and have established system for maintenance of plants growing in nursery.
	- EW's & select FC's members trained on-farm (1 from each district close to river system)	EWs and 25 FC members would receive training in establishing jatropaha nurseries.	This training has been given by Jacob Zulu to only 5 select FEWs chosen to work on research plots.	General training for FEWs for May was postponed to a later date.	Problems with timing and access to transport during May and part of June threw many plans out. Then it was decided that it was too early to establish the nurseries given problems with access to water and later in transplanting with many clubs in a situation where they will most likely have no access to water in the fields. The preference is to establish permanent nurseries, but functioning wells and pumps are still a problem.	Select farmers club members trained in nursery management.

Main activities for whole year 2007	Planned results up to 1 July 2007	Actual results up to end June 2007	Variation	Explanation of variation, problems encountered. Solutions proposed	New estimate of results per end Oct 2007
				Consideration must be given for the time it will take to construct new wells etc, particularly given many clubs have problems with sandy soils. EWs are assisting the selection of appropriate positions and practices, but the formal training will be given in August.	
- Acquire different varieties	Different varieties would be provided for nurseries.	Some varieties have been provided from Tanzania and Guatemala, but not many - more are promised.	Not many varieties have been provided to Bilibiza.	Difficulties sourcing seeds from various locations, promises of supply fallen through. Wrong time of year.	More varieties will have been supplied.
- Seeds distributed & nurseries established	Some nurseries would be established by 1 July.	No nurseries have been established.	The establishment of nurseries has been delayed.	See explanation above (select members receiving on-farm training)	25 nurseries will have been established.
1.6 Sensitise and train 250 farmers to start cultivation of Jatropha	Ongoing process of training farmers club members about jatropha.	Extension workers, teacher trainees and field extension workers have been talking with farmers club members on a regular basis about jatropha - technical aspects with respect to farming and also its merits and potential.	No variation.		
1.7 Plant seedlings and directly seeding plots of 10 - 20 ha at each Farmers Club	103,000 seeds planted directly as live fences.	103,000 seeds planted directly as live fences and also plantation style.	Some direct planting in plantation style rather than just live fences.	Many farmers clubs are interested in the merits of jatropha and are interested in trying it as a plantation rather than just for live fences.	Provided the rainy season commences, more seeds will be directly planted - both as live fences and as plantations.
1.9 Conduct annual field days, planning & review meetings	-	-	No variation. Planned to start August.		

Main activities for whole year 2007	Planned results up to 1 July 2007	Actual results up to end June 2007	Variation	Explanation of variation, problems encountered. Solutions proposed	New estimate of results per end Oct 2007
1.10 Prepare and set up 25 on-farm jatropha research plots of 1 ha	5 research plots established	5 farmers engaged to try different seeds and planting styles and combinations for growing jatropha.	Not specific research plots established, but part of everyday plots.	The farmers have already begun cultivation of jatropha, trialing different planting styles. When first given seeds, they were given little instruction on what to do as staff at the time were also unsure of best practices. The farmers will monitor the conditions of the jatropha plant in each scenario under Flemming Nielsen's guidelines.	Research feedback.
- Training for EW / technician / 5 FEW's from each district on trial plots	Select 5 FEWs (1 from each district) for training in establishing research plots and nurseries.	5 good FEWs selected (1 from each district). Received training in May in Billbiza from Flemming Neilsen and Jacob Zulu in establishing jatropha research plots.	No variation, but shorter than intended.	Problems with time. Flemming Nielsen will return end of July to view progress and provide additional seeds and advice.	5 research plots established.
- Identify model farmer to cooperate	Identify model farmer to cooperate	Model farmers identified.			
1.11 Monitor jatropha research plots	Research plots being monitored on ongoing basis.	System in midst of being established.	System for monitoring not yet completely established.	Flemming Nielsen fell ill with malaria after the research plot training, thus took some time to send forth materials for establishing a monitoring systems. Similarly, Flemming is based in another province (Chimoio) thus visits must be well arranged in advance. When a system is established, the project EWs and technician will also keep an eye on progress.	System of monitoring and collecting information will be well established.
6. Other expenses not directly related to project activities					
	-				
- annual audits	-				
- local travel etc	-				
- motorbikes and bicycles	purchased	only 1 motorcycle has been purchased	not purchased	Communication problems with Head Office (both technical and personal) which led to delay in access to funds.	All necessary day to day equipment purchased.

Main activities for whole year 2007	Planned results up to 1 July 2007	Actual results up to end June 2007	Variation	Explanation of variation, problems encountered. Solutions proposed	New estimate of results per end Oct 2007
- office equipment, 2 laptops 2 digital cameras	purchased	only 1 laptop has been purchased	not purchased	Communication problems with Head Office (both technical and personal) which led to delay in access to funds.	All necessary day to day equipment purchased.
- printing, electricity, office overheads, etc.	-				
8. Setting up of Bio-fuel Training Center on bio-fuels in Central Mozambique					
Improving existing school building into centre and mechanical workshop					
- Improvement of dormitories	Painted & improvements made	Painted & improvements made	-		
- Construction of new toilet and bathroom facilities	Plans submitted to authorities	Plans submitted to authorities	-		
- Construction of workshop for water pump production	Constructed	Plans submitted to authorities	Not constructed.	Waiting on approval from authorities	Constructed
- Construction of warehouse for jatropha oil production	Constructed	Plans submitted to authorities	Not constructed.	Waiting on approval from authorities	Constructed
- Centre generator	Sourced	1 generator has been sourced, but selection is still open at this stage.			
Purchasing and installation of equipment, such as: oil press, bio-diesel production unit, biogas tank, cab truck modified to plant-oil/bio-diesel.	Cab-truck purchased	Not purchased.	Not purchased.	A cab-truck was sourced, but was found to be wanting. Another has been found and will be purchased in July.	Purchased

3.3 Planned results up to 1 July 2007

The main plans up to the beginning of July were to fully establish 25 farmers clubs, continue to sensitise farmers about growing jatropha, begin preparations for building wells to accommodate nurseries and start the nurseries themselves. EPF teacher trainees and field extension workers were to have received some basic knowledge about jatropha and the project so that they could communicate this with farmers club members. Similarly, setting up and equipping the project was a priority including commencing work on improving the centre and building the rope pump and oil pressing workshops.

3.4 Actual results up to end June 2007

By March 2007, a total of 25 Farmers clubs of at least 50 members each had been established as part of the Farmers Clubs Cabo Delgado project located in Quirimbas National Park. Teacher trainees and the project extension workers received a briefing about jatropha and the aims of the project in April, which gave them a foundation of what the project is trying to achieve. Since then, the teacher trainees and extension workers have been in the field, talking to farmers about jatropha to gauge their understanding and improve the knowledge that the farmers have about jatropha cultivation.

All clubs began planting jatropha seeds in either a live fence or plantation layout in the early months of the year. However, difficulties with sourcing seeds at this time meant that they were more often than not delivered to the clubs too late for planting. After surveying the clubs it seems approximately 103,000 seeds were planted up until March.

In May, the project researcher, Flemming Nielsen, and Jacob Zulu, GAIA specialist, came to Bilibiza to give a 2 days seminar to project staff and 5 field extension workers specifically chosen because of their initiative, but also to represent each district within QNP. Mr Nielsen lectured about what is known technically about jatropha and how these field extension workers could contribute to ongoing research on the plant. The field extension workers were given some guidance on how to experiment with planting, including intercropping and layout dimensions, but also with creating a bio-pesticide as many clubs are having troubles with specific insects destroying the plant at its early stages. Mr Nielsen has developed a monitoring system that is about to be applied and has scheduled additional visits to assess progress, particularly with regard to insect management.

Part of the seminar also included Jacob Zulu lecturing on jatropha nursery management. On the second day of the seminar, several clubs were visited and sites chosen for wells and nurseries. At this stage, however no nurseries have been established, only sites chosen appropriate for permanency. Wells and pumps that already exist in the communities have been surveyed and action has begun to improve these where necessary to allow nurseries to be established where the wells are appropriately situated.

With regards to purchasing basic equipment for setting up the project, the project car was purchased in Maputo, but this has not been available for use as it was delivered only in the first week of July. Transport has been a serious problem, severely limiting the ability of staff to visit clubs and purchase materials. One motorcycle was purchased in June as was a small portion of office equipment.

Improvements on the centre dormitories have been started and plans submitted to authorities for building of the rope pump and oil pressing workshops.

3.5 Variation

The main variations are as follows:

- A four day training was not given to field extension workers as planned
- Building new wells did not commence in June, only a survey of existing wells and pumps and minor improvements begun where possible
- Only 5 field extension workers, 1 from each district, have been instructed on building nurseries
- No nurseries have yet been established
- The original proposal indicated 25 research plots, however it was decided amongst project staff, FACT and the project research, Flemming Nielsen, that 1 research plot in each district was enough to represent each region and also more manageable from a monitoring perspective. The field extension workers in each district with the most initiative were chosen to be part of the research program
- Not all equipment to get the project started has been purchased

3.6 Explanation of variation, problems encountered, solutions proposed

It is worth mentioning that while separate to the above variations, Bilibiza's isolation and access to communication and other services at this time has affected all aspects of the implementation of the project to date. There is no telephone landline service and mobile telephone reception is extremely limited, such that, it is only possible for certain telephones to receive and make calls, when the reception allows, in one particular place located 15 minutes away from the EPF centre in the village.

Additionally, until June, there was no internet service in Bilibiza, the closest service being located in Pemba, 100 or so kilometres away. However, until the project truck arrives at the end of July, Pemba can only be accessed by public transport because all 3 of the EPF centre motor vehicles were involved in accidents 3 months ago and were placed in long term repair. The 3-4 hour trip to Pemba currently takes around 9 hours by bus or chapa. Similarly, the centre electricity generator has been having serious technical problems over the last 3 months, often failing to work for a week at a time making it impossible to use laptops and printers. Two small generators owned by the centre and available to run the FACT office also became unusable, both experiencing technical problems. Even a small generator newly bought in May to run the computers in the office broke down during its first week. All these factors have made communication with various necessary parties very difficult, not to mention planning and running of the project on a day to day basis.

Now the centre has internet although this does depend on hours of electricity sourced through the centre generator. Since technicians from Maputo installed the parts for the generator in June, it seems to be functioning well. In August, the centre will begin generate electricity for several hours during the day, in addition to the 3 hours that it currently runs during the evening, improving the hours of access to power. To ensure that the FACT project team can perform its tasks without depending completely on the current generator, I am also attempting to source and finance alternative power possibilities for the office. Similarly, now that the project truck is due to arrive, accessing clubs and cities for the various purposes that arise will be possible without the inconvenience of wasting considerable of time, also providing carriage for making necessary purchases and servicing of clubs.

With respect to the variations of specific project activities listed in the above section, it was felt that a four day training course for field extension workers scheduled in May could be postponed to the time of a more detailed course planned for

August/September. The reasons for this were that nursery management would be a main component, however after many discussions with ADPP project staff who have been working in the area for a long period, May was considered too early to establish the nurseries. While initial discussions had proposed establishing them by riversides, part of the Farmers Clubs Cabo Delgado program is to discourage use of riversides for conservation purposes and it is in the interest of the clubs to establish permanent nurseries in places above flood lines, which can also be serviced by wells. Consideration was also given for the time of transplant for plants cultivated at this time – this would be at the height of the dry season and many clubs would have problems watering the plants to successfully transplant them.

Thus the nurseries will still be established, just several months later following construction of wells and pumps in places selected for their establishment for the long term. Wells will begun to be dug from this time on, following a training and review session for project staff of hand dug wells and the construction of rope pumps held as part of another project early July. Existing wells and pumps will also be improved in the communities where necessary to increase access to water for jatropha cultivation.

With respect to the research plots, as mentioned above, it was decided after some discussion that 1 research plot in each district was enough to represent each district in QNP. Given the initiative shown to date by the 5 chosen field extension workers, the monitoring capacity and thus results to be had from these particular farmers will be more valuable than if all 25 farmers were used, many who cannot read and write, and also more manageable from a monitoring perspective.

Lastly, not all equipment for the basic running of the project has been purchased. The first lot of funds to be transferred before I was appointed project leader have been used for the improvement of the Bilibiza centre. Following this, internal communication problems with head office (mainly to do with Bilibiza's lack of access to communication) meant there were considerable delays with respect to the timing and amount of fund transfers. Thus it transpired that when an opportunity arose to purchase the motorcycles, only 1 could be purchased along with a portion of the office equipment. A cab truck had been sourced in Maputo, but following test drives and mechanical checks it was found to be wanting. Another cab truck has been sourced in Nampula and it seems the condition is good and the purchase will thus go through. When transport is available, it will make it easier to complete the rest of the purchasing of office equipment and so forth.

3.7 New estimate of results per 1 November 2007

All goals set forth for July 1 have for various reasons of practicality been slightly postponed. They should all be achieved by November 2007.

4 Conclusion

The first six months of the project, January – July 2007, were relatively quiet given the stage of the agricultural calendar. The main activities laid out involved sensitising farmers about jatropha and the project, planning nurseries, starting the construction of wells and rope pumps for the nurseries, purchasing basic equipment for commencing the project and starting to improve the condition of the Bilibiza centre.

All of the scheduled activities were begun, but due to considerations or various issues at the time, a number will not really take off until the next 6 month period. As most of activities were scheduled to occur over the space of several months anyway, this should in no way affect the functioning of the project – instead, they are practical changes responding to real issues in the field.

Many of the problems to date have been related to power, communication and transport issues at the Bilibiza EPF centre. Most have come to resolve themselves or are improving with time thus they are unlikely to be as much of an issue in the future as they have been. We are attempting to take action where possible, such as find alternative power sources to the current generator until a new one is purchased to minimise the negative impacts on the project.

Overall, things are looking positive for the next 6 month period and many of the farmers club members are excited about the prospects of really beginning cultivating jatropha from the commencement of the rainy season later this year.