

## **Report on the first visit to Cameroon for the implementation of the World Bank supported Tugi Livestock-Silvopastoral Project**

### **Background**

In 2009, CATIE collaborated with the World Bank and local stakeholders of Cameroon to develop a concept for ecological intensification of cattle production systems in Tugi located in the North West Region of Cameroon with head quarter in Bamenda. This concept was approved for funding from the World Bank's TFESSD in April 2009. However there were some administrative processes in the World Bank that protracted the setting up of the funds and it was not until mid November a contract was signed between the World Bank and CATIE for the implementation of this project. In order to speed the implementation process, Dr. Muhammad Ibrahim of the Livestock and Environmental Management Program at CATIE, organized a visit to Cameroon with Dr Jonathan Agwe, Expert of the World Bank, Prof Ajaga Nji, a Rural Sociologist and Rural Development Specialist in the Faculty of Agriculture of the University in Cameroon, and other local stakeholders, between 28th of November and 7th December 2009, with the following objectives

- Establish collaboration or synergies between the Tugi silvopastoral project and relevant institutions/organizations and projects
- Visit the community to acknowledge approval of their project concept and agree on operational methodology;
- Prepare the groundwork for data collection on the biophysical and socio-economic-cultural-political setting of the landscape in Tugi
- Build ownership of the project with local community leaders and farmers
- Develop a work plan for implementation of the project

### **Institutions/Organisations and Universities identified for Collaboration:**

**World Bank.** A meeting was held with Drs. Qusmane Seck, Cluster leader for Sustainable Development (AFTAR)-World Bank, Jonathan Agwe – Operations Officer of World Bank, and Muhammad Ibrahim, Leader of the Livestock and Environmental Management Program of CATIE, to discuss the implementation of the Cameroon pilot project. In this meeting the objectives of the project and the work plan were discussed with officials of the World Bank office in Yaounde. Basically the project has as its main objective to establish pilot farms with improved forage and silvopastoral technologies in the Tugi Village, to train farmers and local experts on these technologies, and to strengthen local capacity of farmers, organizations and imitations for market based cattle production systems. Dr. Qusmane Seck highlighted that the World Bank is currently implementing a project funded by GEF on sustainable land management, and another project on sustainable development, and there is an interest to develop synergies between these existing projects and that of the Tugi silvopastoral project. According to Ousmane, at least one of these two projects (correct project names once obtained will be included latter) has a window for funding innovative proposals on sustainable land

management and livelihoods and this window could be explored to tap additional funding for the implementation of the Tugi Silvopastoral project. The local policy makers of Tugi are interested to promote alternative energy sources (e.g solar and wind energy and biogas) since the community does not have electricity and there is a dependence on forest resources for fuel wood. Specifically, a proposal can be developed to implement solar panels to establish control grazing systems, and low cost biodigestors to produce cheap gas and organic manure for farming. The project plans to establish cut and carry fodder to supplement cattle, and this means that dung can be collected and fed to the biodigestors.

**University of Dschang:** Prof Ajaga Nji (who is also Found and President of Akwi Memorial Foundation) organized a visit to observe the facilities of the University and research currently being conducted in the animal science department. The University has a soil laboratory that is equipped but there are practically no data bases on the soils of the Tugi landscape and therefore soil samples of the target area will have to be taken to do analysis on fertility and physical properties of soil. Mr Thomas Tebug (Livestock Engineer in the Department of Animal Science of the University) was assigned to follow up on this aspect of soil fertility sampling). In the veterinary laboratory where Mr Tebug works, there is interesting work on the control of animal parasites. Mr. Tebug who is the Lead Technician of this lab agreed to collaborate in providing training to farmers to improve their skills in animal health management. In the field of animal production, there is on going research on the use of *Calliandra calothyrsus* and *Leucaena* for feeding livestock, and the experts indicated that the results on *Calliandra* were more promising than that of *Leucaena*. Apparently the soils are very acid in the area, and *Calliandra* thrives better than *leucaena* on these soils. The plots of *Calliandra* looked green and vigorous and there is evidence of good re-growths after pruning. On the other hand the *Leucaena* plants showed symptoms of nutrient deficiency, and had little foliage or fodder for feeding animals. Some work was also initiated with the use of Guatemala grass under cut and carry systems, and the plots looked green and healthy. *Calliandra* and Guatemala grass will be potential species for establishing on the cattle farms in Tugi. In the case of Guatemala grass fertilizer management, for example the use of organic manure, will be critical for sustainable production in the long term.

The University also has a Centre for Distance Education with a well equipped laboratory for producing materials for farmers including leaflets and videos, and Mr. Pascal Tah, who is in charge of this center agreed to work with the project in the production of the training and dissemination materials. It is important to note that most Tugi farmers have little or practically no primary education, and their language and level of education has to be considered in the design of training materials. However, the lingua franca for training and agricultural extension in the country is Pidgin English which the people speak well. Also, the leaders of the stakeholder community communicate well with their community in the native dialect, Meta which can also be used in training.

**Heifer International:** The Heifer International has a strong program in Cameroon and has worked on small ruminants in the Tugi village before. Heifer has been supporting more than 300 cattle farmers in the North West region, and currently some farmers in Heifer's program are innovating in milk production. It is recommended that the project visit some of the dairy farmers of the Heifer International to learn of their experiences and lessons which can be used for successful implementation of the Tugi silvopastoral

project. Some areas to be looked at are: breeds of animals -use and performance, forages and feeding systems, milking management, marketing of milk, farmers perceptions of milk production on their livelihoods, and the constraints for milk production. Dr. Danilo Pezo, Expert of CATIE, will visit some of the farms when he arrives in Cameroon as from January 2010 to begin the project implementation. The higher management of Heifer International has a keen interest to forge linkages between Heifer International (HI) and the Tugi silvopastoral project. In the Tugi area, farmers are very poor and lack capital for investing in animals, and HI can be involved in providing animals to farmers and developing the technological package for the model farms. On the other hand the Tugi Silvopastoral project can provide technical training to experts of HI, who will be involved as facilitators in the pastoral field school in Tugi and in scaling up of project results.

***RTC (Presbyterian Rural Training Center, Fonta):*** RTC has a livestock farm located in Fonta in the Bambui subdistrict of Bamenda. The farm is located on flatlands where the soil seems (clay) to be better than that of Tugi project area. The farm serves two basic purposes: 1) to provide genetic stock for beef cattle systems to farmers in the area; and 2) provide technical training to farmers on livestock management. The main cattle breeds are Brahman and Long Horn cattle and there are crosses with local breeds and Holstein.

The main grass species used at this farm is *Brachiaria ruizizensis* and there are some areas with *Hyparrehina rufa*, and star grass. Native herbaceous legumes is common in the pastures, and there are many leguminous forage trees and shrubs such as *Acacia angustissima*, which produces a large amount of fodder and is adapted to acid soils. Some studies showed that this species has high tannin content but it can be managed to increase voluntary intake by cattle. Plots were established with Guatemalan grass to be used for cut and carry, and the local experts mentioned that this grass is very productive and consumed by animals.

On this farm and in the surrounding areas there is evidence of colonization with *Tithonia diversifolia* (yellow flower - looks like sunflower) which is a species that thrives well on soils with low phosphorus. However, one farmer mentioned that the animals had diarrhea when Tithonia was fed, another farmer mentioned that Tithonia was only consumed in the dry season. It should be mentioned that Tithonia is a species that is being used in Eastern Africa for feeding dairy cattle, and good milk yields were reported when this species was used to supplement the animal's diet. One potential management strategy may be the use of Tithonia for making silage in mixture with Guatemala grass and Calliandra. Another strategy will be to cut Tithonia and mix with Guatemala grass and Calliandra to supplement in the dry season.

The RTC farm has a staff with experts for training and adaptive research and has facilities for organizing training sessions. The manager showed an interest in collaborating with the project to organize training courses and to do adaptive research with improved forage species. One recommendation for the project will be to organize a short workshop on technology transfer so that participants such as rtc, hi and stakeholder community can share experiences and learn from each other on innovations with the use of forages for sustainable cattle management.

## Some Relevant Characteristics of the Tugi Project Area

**Vegetation and soil landscape:** The area of Tugi which is the target area of the project covers more than 700 km<sup>2</sup> and is located at altitudes ranging from 1500 to 2000 meters above sea level. The landscape is sloping with slopes of more than 60% and is dominated with savannah vegetation, the slopes are characterized with loam soils where grazing is carried out, and on the foot slopes with clay soils that are generally used for root crop cultivation. There is evidence of severe soil compaction and erosion of the top soils. According to local experts the area was dominated with *Hyparrhenia rufa* grass but due to overgrazing and degradation, and the use of fire for managing the pasture, the *Hyparrhenia* grass is progressively being replaced by *Sporobolus indicus* (iron grass) which thrives well on marginal or infertile soils but is very unpalatable for cattle. For decades farmers have been practicing the use of fire for managing the grassland to produce succulent forage in the rainy season and to reduce tick infestation. However, this together with overgrazing and soil degradation has led to colonization of iron grass

One of the challenges of the project is to find solutions for reducing colonization of iron grass and to recover degraded pastoral lands with more productive forages for sustainable production. It is recommended to introduce legumes in the pastures in order to improve soil fertility and animal production. Some small plots of *Arachis pintoii* exist in home gardens around Bamenda which seems to be doing well, but large quantity of planting material will be required for commercial planting. Other species that are adapted to the area should be explored. For example some *Erythrina* spp are being used for live fences but there is little knowledge on systematic management of this species for producing fence posts and fodder for the animals in Tugi. *Erythrina edulis*, which does well in highlands and is palatable to cattle may be considered for fodder banks and fence posts.

There are small patches of forest in the rifts or small valleys in the landscape where the water sources are found. However, cattle has been encroaching in these areas and the forest patches are becoming more and more degraded. Eucalyptus was introduced in these sites but farmers reported that this species was sucking the water from the land which affects flow of water to the communities. In terms of the provision of environmental services, the Tugi area serves as a catchment for water for many of the surrounding communities or villages and there is need to implement projects for the protection of the water recharge zones. With the intensification of livestock production area, the recharge areas may be excluded from cattle, and native forest species produced by local communities can be planted to recover these areas.

**Cultural landscape of Tugi:** The population of Tugi is made up of two groups: the indigenous/permanent “Meta” and the migrant/nomadic “Fulani or Bororo” groups, and there are cultural differences between these two groups and in their livelihood strategies. The Fulanis in general depend solely on livestock (in particular cattle) for their livelihoods, as cattle is sold for generation of income to satisfy their needs and they generally practice grazing on communal lands. Local sources informed that the average family size of the Fulanis is larger (8 children per woman) than that of the tugi indigenous peoples (4 children per woman). This figure is true of the Meta group as a whole. On the other hand the “Meta” in general have a diversified strategy for their livelihood, as they rear cattle, and cultivate root crops which serve for their the basic diet or subsistence food. Livestock is sold in difficult times or during when there is an

emergency need (health, education, etc) to generate income. There are three types of land tenure in the Tugi Landscape: 1) communal lands that are used for grazing, 2) family land used for food crop and palm wine production and 3) land for which permits ARE given by the local government authorities for grazing. Frequent conflicts often occur between pastoral grazers (mostly men) and crop cultivators (mostly women), and this issue must be addressed in the implementation of the project. In the Tugi community, there are more than 100 Meta combined livestock-crop farm families and less than 40 Fulani livestock families.

***Insecurity:*** Cattle rustling and or theft represent a major limitation for developing market based livestock systems. However, the project intends to promote intensive ecological management of silvopastoral systems, and animals will be confined in holding areas during the night which will reduce the risk of cattle theft. The introduction of electric fencing and cattle tagging will contribute to increase cattle security in the area

***Marketing of livestock:*** A large percentage of the livestock produced are marketed in 6 DIVISIONAL ONE REGIONAL cattle markets. THIS involves bidding or bargaining between the buyers and sellers. The municipal council charges a cow tax for each animal that is sold in the cow market. A visit was made to the Up-Station (Mendankwe) the regional cattle market near Bamenda to observe how farmers do business with their cattle and the breeds of cattle. The breeds observed in the market place and within grazing plots in the landscape showed that the Long horn or Borroro breed was the most dominant cattle breed in the area. According to local experts, it takes up to 7 years to market an adult cow, which may be related to the poor quality of pasture. There are some examples where farmers have been implementing other breeds of cattle, for example Holstein and Semental. Some cross between Holstein and long horn breeds were observed at the market place.

***Stakeholder Buy-in and development.*** The Tugi silvopastoral project received endorsement from the Fon of Tugi who is the traditional ruler and indigenous owner of the village land, the Mayor of the Mbengwi Municipality/Rural Council and the Senior Divisional Officer or Prefect (representative of the President of the Republic) for Momo Division of Cameroon resident in Mbengwi. Mbengwi is the administrative head quarter for the Division, and the Rural Council, of which the Tugi Community The Mayor of the Mbengwi Rural Council explained that there are plans to improve the infrastructure of the area, for example, an alternate road will be constructed which will permit better accessibility to and from farms, and marketing of livestock and cattle products. As already mentioned, the local communities do not have access to electricity and there is an interest to develop solar energy for supplying electricity to local communities. Already, there is one prototype of solar panel in the Tugi area which is supplying energy to the owner. The existence of this prototype is a good indicator that the community will be willing to try innovations in solar energy. The project, therefore, plans to explore implementing rotational grazing systems and also the use of solar panel for installation of electrical fences. This latter technology could be explored in the landscape when it is appropriate. One potential problem for use of this system may be related to insecurity in the area but this would be resolved by strengthening the village security guard system already set up by the community three years ago. The group of 10 able-bodied young men patrol the community and look out for trouble spots which are

then reported to the national gendarmerie and police in Mbengwi. It will be good to reinforce the work of this group in the project in a comprehensive security guard system along with farm manager's farm house.

### **Management Committee**

A management committee was established to provide technical and administrative support in the implementation of the project. The management committee will be headed by the Founder and President of Akwi Memorial Foundation, with members from the Faculty of the Agricultural Sciences (FASA) of University of Dschang, Heifer International, Ministry of Education, Tugi Village, Mbengwi Rural Council. The management committee has appointed Mr. Thomas Tebug of the Livestock Unit at the FASA-University of Dschang to be the expert who will be in direct contact in the field with CATIE's consultants and local experts to be contracted. Mr. Tebug will also be responsible to provide technical support for the establishment of farm models and to provide training. The management committee will review work plan and progress reports submitted by CATIE and will make recommendations to achieve project results

***Akwi Memorial Foundation:*** The Akwi Memorial Foundation (AMF) has experience dealing with grassroots development projects in the area and has a vested interest in the development of the Tugi village. Since CATIE's headquarters is located in Costa Rica which is far from the project area, it was agreed to develop a letter of understanding with AMF to channel resources of the project to directly fund project activities. In this regard, AMF will open a bank account with a local bank in Cameroon and will communicate the bank account information to CATIE. CATIE will then transfer the required project funds for use locally into this account. CATIE's experts will have the responsibility to approve the use of the funds according to its agreement with the World Bank and will authorize AMF on disbursements. CATIE will require AMF to submit all the original receipts, including bank statements (minimum balances, etc) and a short report as to how the funds were used. Following the completion of the project, AMF will have to return all remaining funds that were not spent as stipulated in the contractual agreement between CATIE and the World Bank. CATIE in turn will provide financial reports to the World Bank as agreed and return all remaining/unused funds upon completion of the project. AMF agreed to provide office space to CATIE's expert who will be based in Tugi via Bamenda for 4 - 5 months per year during the project implementation period.

### **Conditions that will promote the success of the project**

- Farmers are dependent on their livestock as a means for securing livelihoods, and land degradation and climate change are major threats for their survival. In this respect the farmers are motivated to look for alternative forage systems to improve the productivity and sustainability of the existing production systems
- The local leaders and policy makers (The Mayor, The Senior Divisional Officer/Prefect, The Fon (King) of Tugi Village) have expressed their full support to the project and are committed to facilitate its successful .

- Management Group Committed to the Development of Tugi. The project will be overseen by a management committee made up of key staff members from Akwi Memorial Foundation, the University of Dschang, the Mbengwi Rural Council, the Ministry of Education, and Tugi Village Traditional Council led by its King. It should be noted that all the members of this Oversight Management Committee are from the Tugi community and they have pledged to volunteer to work together for the development of their community.

### **Major challenges for the implementation of the project**

1. There is evidence of severe erosion and land degradation in the area which has led to the colonization of iron grass which is an unpalatable species. The soil is very compacted and will need some form of tillage for the establishment of new or improved grass and tree or shrub cultivars. Some local experts suggested to hire a "roto-tiller" to determine if it can be used for minimum tillage and this may be tested. An alternative may be to contract local labor to do minimum tillage in rows where seed will be planted (need to determine cost). Fertilizer recommendations will have to be determined based on soil analysis.
2. Technology and training. There has been little innovation in the development of improved forages and silvopastoral systems for ecological management of livestock in Tugi. Therefore, the project will have to provide training to local experts and farmers to build a critical mass for technological innovations. It will have to use good judgment in the selection of forage species that are adapted to local conditions and in the development of management strategies that fits within the bio-physical, socio-economic and cultural landscape.
3. Selection of pilot farms. The project will establish 6 model farms - 1 on community land and 5 on family lands managed collectively with grazing permits. The project will have to use a transparent selection process to identify the family cattle farms to establish the models or farm prototypes with silvopastoral technologies, and this should be done by setting up the selection criteria and good consultation with the community and local leaders. Selection criteria should include:
  - a. Family-owned the grazing land and demonstrate its ownership through some form of permanent investment on the land (trees, fences, housing) and are permanently resident in the area. This is crucial for the management of diary farms and or beef farms oriented to markets.
  - b. Farmers would have invested on the land and commit to provide matching resources for the establishment of the model farms, for example, making available resources dedicated to procure labor, fence post, and other accessories required by the technicians who would provide estimates for the establishment of such farms.
  - c. The estimated matching resources would have been deposited in a dedicated account with local financial institution for at least three months prior to the start of pilot farm activities.

- d. Farmers will have to milk the animals, cut and carry forages for feeding, and practice rotational grazing, animal health, etc, all which require permanent presence on the farms;
  - e. Farms selected are accessible and are visible to organize field days;
  - f. Farmers have a good relation with the rest of the group and community and will be able to communicate in their own language the experiences and lessons learnt;
  - g. Farm or plot is representative of the types in the target area because the donor is interested in targeting poor farmers and this should be considered in the selection process;
  - h. Farmers with cattle on the land to be dedicated for the piloted improved pastures means that they will have to temporarily remove their animals and keep them away from the area planted with improved technologies until it is ready for grazing before the bring the animals back.
4. Establishment of model farms. The project has limited resources that will be invested in each farm or plot and therefore an investment plan will have to be developed based on the resources available, and to reach the objectives of the project. For example, the community plot has an area of more than 60 ha and the project will not have sufficient funds to fence this area while at the same time to establish improved pastures, purchase animals, and establish infrastructure. Therefore it is recommended that development of the area starts first in the flatland (area to be determined) to establish a rotational grazing system and the revenue generated with the sales of animals be used to progressively expand the rotational grazing in the slopes. The plan of investment should be made for a five year period. The first task may be to establish the perimeter fence-to plant in the next rainy season, and then division may be done to establish rotational grazing. On the other farms, the plan should take in consideration that farmers have cattle and therefore establishment of improved pastures means that they will have to look for temporary solutions to keep the cattle away from the area planted with improved technologies until it is ready for grazing. This will depend on what % of their total available grazing area will be dedicated for the pilot planting).
5. Insecurity- is one potential threat for the success of the project. Stealing of fencing materials, equipments and animals, etc will affect the success of the project. However, measures will have to be taken to minimize this problem.
6. Conflicts between communal and controlled grazing - experiences elsewhere showed that under this circumstance, farmers who practiced communal grazing usually damage the fence to put cattle into the area planted with improved technology which results in overgrazing and degradation of the pastures. To overcome this problem, the project will have to work to educate all the farmers in the area and involve them in the decision process and explain the benefits.
7. Presence of experts and local technician contracted. It is very important that there is presence of a critical mass of experts in the area who are working with the farmers as this will increase the support of farmers and the community to the project. The local expert contracted will have to visit the farms continuously and provide recommendations to the farmers for improving their management skills.



Expert from the management committee will have to visit the area frequently and participate in the implementation of the project.

8. Scaling up of project results. From the inception the project should work with the local community leaders and policy makers to develop a proposal for replication of project results in the area as this will inspire confidence with the rest of the farmers including the Fulani group. This should be emphasized since the project will establish model farms first with the Meta group and only on 5 farms with permits, and therefore it is critical that the rest of the community are aware of the interest in mobilizing funds for replication of the project results.

### **Follow up on project implementation**

1. CATIE will establish a contract with Akwi Memorial Foundation to channel funds for the project activities which will be used in consultation with CATIEs experts (Danilo Pezo and Muhammad Ibrahim). Muhammad Ibrahim will prepare draft agreement and send to Prof Ajaga Nji by 17<sup>th</sup> December for review and feedback.
2. The Management Committee will work with World Bank staff to develop the baseline of the six farms selected which will be sent to CATIE by December 22. This will be the responsibility of Prof Ajaga Nji and Dr. Agwe.
3. CATIE will prepare a Terms of Reference (TOR) for contracting local experts for the implementation of the project and send to the Management Committee. Based on the TORs prepared, the Management Committee will send 3 CVs of potential candidates for the local consultant position (responsibility Muhammad Ibrahim - 22<sup>nd</sup> December 2009)
4. Local expert will be contracted by the 22<sup>nd</sup> January, 2010.
5. CATIE will send an International Expert (Dr Danilo Pezo) at least 2-3 times per year to supervise and provide technical expertise for all project activities. The Management Committee indicated that since the project has been delayed in the implementation by 6 months, and that the rainy season will start in March, it is recommended that the visit of CATIEs expert be for at least 4 - 5 months, so as to have good start of the project.
6. CATIE will send a revised work plan for consideration of the Management Committee (responsibility of Muhammad Ibrahim by 14<sup>th</sup> December, 2009)

### **Work plan 2010- 2011**

In the table is presented the work plan for the implementation of activities over the next 1.5 years (18 months):

1. The first two months of the project will be focused on establishing agreements with local and international institutions that will be critical for scaling up of the project results. As mentioned above the farmers have little knowledge on the use of forages for ecological intensification of cattle farms and in this period also the project will work to create farmer's awareness and improve their knowledge

ecological intensification of livestock for the target area. This will involve an evaluation of their local knowledge of the grazing environment and how the implementation of improved technologies will affect their livelihoods, for example use of labour, competition between labor for intensive management of livestock vs crops, competition of land for livestock vs crop management, income generation etc. Based on this analysis with the farmers, a plan for training and improving their skills (adapted from pastoral field schools) will be designed and implemented

2. Establishment of Farm Prototypes- The rainy season will begin in March 2010 and since the project will end in June 2011, this means that there are only two rainy seasons, and since the project has an interest to do some preliminary evaluations on cattle performance, it will have to concentrate in the establishment of the farm prototypes in the next rainy season (March-April, 2010). Therefore the priority for the first four months will be to build fences and establish forages and or improved grasses on the private farms and communal plot selected. This will involve the establishment of baseline data of each site: plot or farm size, area for pasture, % area on slopes and flat lands, soils, type or species of pasture, no of animals according to category, grazing system, sales of animals, data on family household etc. Note is taken that some of the farms do not have cattle but have dedicated counterpart resources for the improvement of infrastructure already on the farm such as live fences, as well as for the establishment of forage banks before going on to buy the recommended breeds. The next step will be the development of a farm plan using participatory approach and an investment plan (establishment of forages, infrastructure, and purchasing of animals). Purchase of animals will be done after June 2010 because according to the agreement, only USD 100,000 can be disbursed in the first year of the project and therefore the priority will be to invest on forage establishment (including fencing) before June 2010. When funds become available for the second year, then cattle will be purchased.
3. Participatory Training: Participatory training methods will be used throughout the period and will be planned at critical time or events of the project- for example – establishment of nurseries, fencing, establishment of pasture and fodder banks, establishment of pasture divisions for grazing, grazing, evaluation of growth and performance of pasture and fodder banks in different stages, evaluation of animal grazing and performance, observation of cut-carry feeding to animals, etc. Training events will also be organized on animal health, milking and milking hygiene, marketing and management.
4. Monitoring and Evaluation: A protocol will be developed and implemented for monitoring and evaluation (M&E) of farms, farmers and of the other project activities.
5. Linkages with Heifer International and RTC: A collaborative agreement will be developed with Heifer International to develop and possibly expand the farm prototypes and to collaborate in training events. An agreement will be developed with RTC to provide training in the area of forages and animal health management, and seeds.

6. Proposals: During the first two trimesters, the project will work to develop a proposal to leverage additional funding from existing WB projects in Cameron to promote sustainable livestock production in the Tugi district. In the last 3 trimesters, the emphasis will be on developing the following proposals: organization of farmers for market based livestock production using value chain approach, develop a proposal for payment of environmental services and develop a proposal for scaling up of project results
7. The Management Committee will have meetings once per month to monitor progress of project activities.

Work Plan for Implementation of the Tugi Silvopastoral Project (2010- 2011)

Activities	2010												2011					
	Trimester 1			Trimester 2			Trimester 3			Trimester 4			Trimester 5			Trimester 6		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	jan	feb	Mar	apr	may	June
<b>Collaborative agreements</b>																		
- Akwi Memorial Foundation	2																	
- Management Committee	2																	
<b>Hiring Personal (local and intr exp</b>	1-2																	
<b>Development of Model farms</b>																		
- Selection of farm-communal plot <sup>1</sup>	4																	
- Develop Farm (comm.) plans	4	1																
- develop investment plan- each	4	1-2																
-Establishment of nurseries	4	1- 2																
- Fencing and prep. Of sites		1-4	1															
- Purchasing of seed and inputs	4	1-4																
- Planting			1-4	1-2														
- Re-planting- weed con etc			3-4	1-4	1													
- Management of plots					3-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4
<b>Infrastructure- coral etc</b>								2-4	1-4	1-4	1-4							
Purchasing of animals <sup>2</sup>											3-4	1-4						

<sup>1</sup> 5 farms with grazing permits or a clearly established family ownership and 1 communal plot,

<sup>2</sup> Grazing will be initiated when the forages are properly established- some farms have animals already, and animals will be purchased for those without animals

<b>Monitoring and evaluation of farms</b>							1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-3
<b>Training and capacity building</b>																		
Short course (1 day) for local experts	4																	
- Workshop with farmers-awareness and knowledge building of technologies	3- 4	1-2																
-Develop training events with farmers-pastoral –school	3-4	1-2	1-4															
- Field events with farmers to evaluate technologies				1-4			1-4				1-4			1-4		1-4		1-4
-Evaluation of farmers perception-etc							1-4				1-4							1-4
- Develop training materials-farmers				1-4							1-4						1-4	
<b>Farmers organisation and marketing</b>																		
- proposal for organisation of farmers, and marketing using value chain approach													1-4	1-4	1-4	1-4	1-4	
Proposal for PES <sup>3</sup>														1-4	1-4	1-4		
Proposal for scaling up-project													1-4	1-4	1-4	1-4		
<b>Linkages with existing projects and institutions</b>																		
- Collaboration with Heifer International developed and		1-4																

<sup>3</sup> PES = payment for environmental services.

implemented																		
- Proposal developed to leverage funds with WB project in Cameroon			2-4															
<b>Management</b>																		
Management Committee meeting to review progress of project	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
CATIE-report to WB						4						3			4			4
CATIE-negotiation of Contracts with WB <sup>4</sup>	4				4					4				4				
Final report																		4

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<sup>4</sup> Preliminary funding of USD 50,000 has been allocated for FY10; and there is need to allocate the remaining balance (USD 50,000) as soon as this site visit report and the revised workplan ensuing from the stakeholders' meeting held in the Akwi Memorial Foundation Office on Thursday Dec 03, 2009 is received by the World Bank. The initial project activities must start as planned in order to deliver the results in a timely manner.

### Experts and Decision Makers Contacted

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