Completion report (PD 530/08 Rev.3 (F))

Phase 2 of ITTO project PD 30/97 Rev. 6 (F): management of forests established through rehabilitation of degraded forests by local communities in Ghana

Host Government:

The Government of Ghana

Executing agency:

CSIR-Forestry Research Institute of Ghana

Kumasi, Ghana, September 2017

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Disclaimer:

The views expressed in this report are those of the authors and do not necessarily reflect the views of ITTO or the Government of Ghana. The materials contained here are based on the authors' knowledge of the subject and how they can contribute to the management of plantation established in degraded forest reserves by local communities and similar project sites in and outside Ghana.

Acknowledgement

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List of abbreviations and acronyms

SFM	-	Sustainable Forest Management
PES	-	Payment for environmental services
GPRSP	-	Ghana Poverty Reduction Strategy Project
FSDP	-	Forest Sector Development Programme
FORIG	-	Forestry Research institute of Ghana
KNUST	-	Kwame Nkrumah University of Science and Technology
FIP	-	Forest Investment programme
DS	-	Dry Semi-deciduous
FC	-	Forestry Commission
DFD	-	Deforestation and forest Degradation
NTFPs	-	Non-Timber Forest Products
REDD	-	Reduction of Emission from Deforestation and Degradation
DSFZ	-	Dry semi-deciduous Fire Zone
MSSE	-	Moist Semi-Deciduous Southeast
HFZ	-	High Forest Zones
POLM	-	
YPO	-	Yearly Plan of Operation
FSD	-	Forestry Service Division
NPV	-	Net Present Value
RSMC	-	Resource Support Management Center
ITTO	-	International Tropical Timber Organization
EA	-	Executing Agency
MTS	-	Modified Taungya System
GIS	-	Geographic Information System

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Executive summary

The degraded portions of the three forest reserves which are the study areas of the project are surrounded by a number of communities. By virtue of proximity to these areas, communities depend on these reserves for their livelihood.

This project originated from the report of consultants of the ex-post evaluation of the phase I project PD ITTO Project (PD 30/97 Rev 6 (F) which reported the need for management of the plantations established in this phase. This is in addition to the request made by the local communities for an extension of the first phase of this project. The key problem addressed was forests established by local communities by rehabilitating degraded forests are not collaboratively and sustainably managed. The development objective was forests established by local communities by rehabilitating degraded forests become one of the major sources of livelihood and improving landscapes.The specific objective was to collaboratively and sustainably manage with local communities, forests established by rehabilitating degraded forests.

The strategies used in the project's implementation include i) a startup workshop organized for all relevant stakeholders with special emphasis on local communities including women; ii) capacity building programmes carried on; on options and strategies for forest management, preparation and implementation of management plans, seedling production of selected species, methodology for calculation of financial values of timber trees before reaching legal size for exploitation and ecosystem services and studies made on opportunities and challenges for PES; iii) empower local communities to manage their forest, increase the diversity and density, and calculate financial values of timber trees before they have reached final exploitation size and also of environmental services including carbon stock; and iv) determine from the communities, a governance structure that guide the management of the forest as well as supervise the distribution of any revenue the forest will generate in future.

One activity was added during the project's implementation. This was done at the project steering committee meeting with approval from ITTO. The planned specific objective, outputs and associated activities did not change and have all been completed within schedule but with extension of additional 9 months with no extra budget from ITTO.

Techniques, strategies and governance lessons for engaging local communities in restoring degraded forest reserves through the MTS have been developed; economic value of the established plantations of the project area have been estimated; and methodologies on estimating the lumber value of the established plantation before final rotation have been developed using data collected in the project site. These have provided better understanding of DFD and CO_2 emissions in the study area. These strategies and methods also provide measures to help address the DFD and improve environmental conditions in the study area before the project implementation.

The primary beneficiaries including the local communities and the FSD have been involved in the development of the strategies, methods and measures. In this way, their capacities have been built and it would be easier for them to continue with project interventions with some support from the other stakeholders because they own these strategies and methods.

The registration of plantation established by local communities for benefit sharing done under this project has raised the interest of farmers in this activity. A lot more farmers in and outside the project communities have shown interest in this exercise and are requesting for additional portions of the degraded forest reserves to plant the trees. This will facilitate the reduction of DFD, enhance carbon stocks, increase timber trees and enhance livelihood in the study areas.

In estimating the financial value of timber species before final rotation, the economic value including carbon stocks of the established plantations and determining feasibility of designing and implementing PES schemes in planted forests areas for communities under this project; sample plots for biophysical data collections have been laid, land cover change maps have been produced, the baseline carbon stocks of the project site have been produced, community lumber value calculators have been produced and communities trained on their use to estimate the value of their standing trees before harvesting. These are important methods, technologies, strategies and information obtained from the project that are

relevant for monitoring carbon emission reduction activities in and outside the project sites. The lumber value calculators developed for the communities are also beneficial for both farmers on the project and those outside the project area to use to estimate the value of trees planted particularly outside the forest reserves

The partnership between the local communities and the FSD within MTS for rehabilitation of degraded forest reserves, apart from being a useful arrangement in ensuring the restoration and sustainable management of the degraded forest reserves, was also a very helpful medium in the identification process, development and implementation of this project. Within the MTS for rehabilitation of degraded forest reserves, the key problem of the project was thoroughly analyzed in collaboration with these two main stakeholders. The main and sub causes of the problem to be addressed were identified. The effects of this problem were also identified including the impacts. Following from this, thorough identification of the activities of the project was done to coincide with the sub causes. The main outputs were identified to coincide with the main causes and the specific objective identified to coincide with the key problem. The specific objective was carefully identified to contribute to the development objective of the project. The project design was very sound because, there were sufficient interventions including the outputs and corresponding activities to address the problem.

The implementation of the project was participatory. The active collaboration and participation of the partners and stakeholders of the project ensured its smooth operation. Further, the field monitoring by ITTO and the executing agency contributed significantly to the successful implementation of the planned project activities.

The key problem to be addressed by a proposed project must be adequately analyzed in the best way that correctly identifies relevant main-causes and sub-causes of the problem as the basis for defining relevant project elements and interventions. Further, to achieve the soundness of a project design, it should be closely linked with adequacy of problem analysis.

Roles and responsibility of the stakeholders need to be identified and assigned prior to the implementation of each activity of the project. This helps to forestall any risk and confusion and bring about smooth implementation of the project

It is advisable to put together, a well dedicated project management team, ensure timely availability of inputs in terms of funds and establish PSC to provide good counsel to project management team. Further, a project is to be implemented in a participatory manner. This will engage the stakeholders and help create ownership and increase support to the project during its implementation and after completion.

It is recommended that a sustainability plan be drawn and discussed with the project stakeholders and partners. This ensures that actions and programs to be taken to ensure sustainability of the project after completion are identified at these discussion sessions and the responsible institutions identified to make follow up on these actions and programs.

Field monitoring by ITTO and the executing agency is required to ensure the successful implementation of the planned project activities. During these monitoring exercises, challenges associated with the implementation of the project need to be identified and addressed, primary beneficiaries (e.g. local communities) encouraged to continue to work on the project and their needs related to the project also identified and addressed.

1.Project identification

1.1 Context

The first phase of the project was undertaken in three forest reserves representing different forest ecological zones. The reserves were Pamu-Berekum Forest Reserve representing the Dry semi-deciduous forest ecological zone (DS) in the Dormaa forest district; Afrensu-Brohoma Forest Reserve in the Dry semi-deciduous Fire Zone (DSFZ) subtype in the Offinso forest district and the Southern Scarp Forest Reserve of the Moist Semi-Deciduous Southeast (MSSE) forest subtype in the Begoro forest. The study was done in three administrative districts including Dormaa Ahenkro, Fanteakwa and Offinso North. The economy of the study area is an agrarian one and used to be one of the richest and leading producers of cocoa and citrus in Ghana before the 1983 bush fires, which destroyed most of the farms in the area. The bush fires have led to large tracts of very rich arable land lying idle besides what has been put under cultivation by few farmers. This is the major contributory factor to high level of poverty in the area especially among farmers. Besides this fire disaster, most of the existing cocoa farms in the area are very old and the yields from these cocoa farms are poor. Moreover, the youth who are supposed to take over from the old farmers have abandoned the land and have moved to the cities, notably Kumasi and Accra to search for non -existing jobs due to lack of material and financial support to enter into farming. Akan culture which is the most dominant in Ghana dominates in the area. However there are migrant settlers from the north who also practice their culture alongside the Akan tradition/culture.

This project is relevant to the National Forest and Wildlife Policy (2012) which has among its objectives, the management of the existing forest estate for sustainability of timber and non-timber resources, expansion of the nation's forest cover for increased yields of domestic and industrial products, rehabilitation of denuded lands, protection of water catchments and stream banks and enhancement of the natural environment.

In addition, the project is relevant to the Ghana Poverty Reduction Strategy Programme (GPSRSP). The GPSRSP document emphasizes the need to: i) protect, rehabilitate and sustainably manage the national land, forest and wildlife resources through collaborative management and aimed at increasing the incomes of rural communities who own these resources, and i) enhanced community involvement in the management of forest and wildlife and savannah woodland resources and improve the benefit flows to communities from resource sales.

Further, this project contributes to national and regional programs including: i) the Forest investment programme (FIP) and ii) the National Forest Plantation Development Programme.

1.2 Origin and problem

This project is an extension of phase 2 of the project proposal PD ITTO Project (PD 30/97 Rev 6 (F) on Rehabilitation of degraded forests with collaboration of local communities. This phase originated from (i) report of consultants of the ex-post evaluation which reported that there was need for management of the areas planted, and local people requested for extension of the project and there was the need to replicate the project in other areas, ii) consultant report asked that there should be second phase to look at successional development of plantations. In a survey undertaken by the project team for ITTO immediately after the project, the local communities requested for an extension of the project because they had seen how beneficial it was. The project was designed to address these requests made.

Phase one of the ITTO project PD 30/97 REV 6 (F) was implemented by the CSIR-Forestry Research Institute of Ghana. Through this project, local communities established 240 ha of plantations to rehabilitate some of the degraded forests using agroforestry and block plantation systems. However, per the regulations passed by the Ghanaian parliament, the farmers who planted the trees and the local communities who are the landowners are entitled to 40% of the area planted. Unfortunately these forests

have never been sustainably and collaboratively managed to be of benefit to local communities of any generation since the completion of the project. This was presumably due to i) lack of coordination between Forest Service Division of the Forestry Commission, who have the mandate to manage all forest estates in Ghana, the traditional authorities and local communities of the areas where the planted forests are sited, ii) lack of consensus on management options and strategies because the different stakeholders have different objectives for management, iii) lack of interest in management by the local communities due to unavailability of many NTFP-producing species, lack of income from timber and non-timber species as well as unforeseen payment of the environmental services including the carbon stock.

The effect is that illegal exploitation has started in the planted forests, causing forest degradation, damaging the resources that sustain the livelihoods of forest-dependent communities and thus reducing communities' expectation that the forest will contribute to the improvement of their livelihood.

2.Project objectives and implementation strategy

2.1 Rationale

All the vegetation types in Ghana, except for those comprising the savanna, are considered tropical forests and play very important role in supporting the livelihood of millions of Ghanaians and the rural communities as a whole. However, the combined effect of over-exploitation of forest resources, unsustainable farming practices, wildland fires and mining activities have significantly reduced the forest area and degraded most of the reserved forests and the forests outside reserves. The continuing forest loss threatened the existence of the indigenous tree species and associated biodiversity through habitat loss and accelerated soil erosion, thus affecting the agricultural productivity on which the livelihoods of rural people depend. Sustaining the diversity of the tree species and the value of the natural forest is a matter of increasing concern not only for Ghana but for the entire West Africa region.

The project aims at contributing to rural livelihood by improving benefits from forests established by local communities through rehabilitation of degraded forests. Through a participatory approach, the specific objective is to develop models, identify strategies and use them for management of forests established by local communities through the rehabilitation of degraded lands leading to enhance conservation, provision of goods and services and also determine mechanisms for payment of the services to ensure improved livelihood of local communities.

2.2 Project Objectives and implementation strategy

2.2.1 Development objective

Forests established by local communities by rehabilitating degraded forests become one of the major sources of livelihood and improving landscapes.

2.2.2 Specific objective

To collaboratively and sustainably manage with local communities' forests established by rehabilitating degraded forests.

2.2.3 Implementation strategy

Knowledge-Empowerment-Governance implementation strategy has been employed. The approach consist the following

A startup workshop was organized where all relevant stakeholders with special emphasis on local communities including women were briefed about the project. The stakeholders were requested to make contribution to the project planning and implementation. Roles and responsibilities of stakeholders were determined and monitoring mechanisms established. Periodic meetings were organized to evaluate the progress of work. All studies carried out were of reasonable magnitude so as to provide data that

contribute to community based forest management.

The project increased also the knowledge and understanding on issues that contribute to community based forest management. As a result, capacity building programmes were carried. They included the following; options and strategies for forest management, preparation and implementation of management plans, seedling production of selected species, methodology for calculation of financial values of timber trees before reaching legal size for exploitation and ecosystem services and studies made on opportunities and challenges for PES.

The capacity building programmes conducted empowered local communities to manage their forest, increase the diversity and density, and calculate financial values of timber trees before they have reached final exploitation size and also of environmental services including carbon stock. These serve as reference for local communities and other stakeholders in the implementation of community based forest management after the project implementation. The improvement of the capacities of the stakeholders especially the local communities and the provision of reference in the form of publication contribute to institutionalizing of the practice within local communities.

The project determined from the communities a governance structure that guide the management of the forest as well as supervise the distribution of any revenue the forest will generate in future.

2.3 Assumptions and risk

The project has the objective of empowering local communities to participate in the management and governance of the planted forests to achieve its prime aim of increasing provision goods and environmental services. The major stakeholders in this regards are the local communities and the officials of Forest Services Division who are currently responsible for forest resources in Ghana. The risk anticipated was the likely technical arrogance on the part of administrators and misunderstanding on the part of the local communities regarding the management of the established forest plantation. This was likely to lead to conflict between these two major stakeholders especially as concerned with the utilization of goods and services. It was anticipated this conflict if not minimized will demotivate the local communities and thus prevent them from the participating in project activities. To minimize the risks the following action were taken; i) Determination of potential risks and actions to mitigate these through participatory consultation with all stakeholders; ii) development of conflict resolution mechanism between the stakeholders, iii) empower local communities in the implementation of the mechanism; iv) scale up dissemination of good lessons learnt in the implementation of project to the wider community outside the project areas.

3.Project Performance (Project elements planned and implemented)

3.1 Planned verses realized project elements

The planned specific objective, outputs and associated activities did not change as indicated in Table 1. One major activity was added. This was Activity 4.5: Registration of plantation established by local communities for benefit sharing. This was done at the project steering committee meeting with approval from ITTO. These activities have all been completed within schedule but with extension of additional 9 months with no extra budget from ITTO.

Table 1: Realization of project elements based on YPO1, YPO2, and YPO3 and YPO4 (9 Months extension 2016)

Description of output/activities	Realization	Remarks
Objective: Development objective: Forests established by local communities by rehabilitating degraded forests become one of the major sources of livelihood and improving landscapes. Specific objective: To collaboratively and sustainably manage with local communities' forests established by rehabilitating degraded forests.		
Output 1 Management options and strategies identified and implemented by Stakeholders		
Activity 1.1: Determination of the state of forest cover and land use types in the study area	100%	
Activity 1.2: Mobilization of stakeholders	100%	
Activity 1.3: Determination of indigenous knowledge on options and strategies	100%	
Activity 1.4: Determination of management options and strategies	100%	
Activity 1.5: Building the capacity of local communities in available options and strategies	100%	
Activity 1.6: Development of management plans		
Activity 1.7: Implementation of management options, strategies and monitoring mechanisms	100%	
Output 2: The diversity and density of indigenous timber species and NTFPs in plantations increased.		
Activity 2.1: Selection of timber species and NTFPs for plantation establishment	100%	
Activity 2.2: Development of capacity of local communities in the production of NTFPs and indigenous timber trees	100%	
Activity 2.3: Identification of suitable planting techniques for timber trees and NTFPs	100%	
Activity 2.4: Assessment of survival and monitoring growth rate of planted timber trees and NTFPs	100%	
Output 3: Financial value of timber species before final rotation and environmental services including carbon stocks determined		
Activity 3.1: Identification and mapping of key ecosystem services.	100%	
	100%	
Activity 3.2: Building the capacity of local communities in determination of forest carbon stocks. Activity 3.3: Quantification of key ecosystem services including forest carbon	100%	
Activity 3.4: Economic valuation of key ecosystem services	100%	
	100%	
Activity 3.5: Identification of methodology for predicting the financial values timber trees before final rotation	100%	
Activity 3.6: Application of methodologies to determine financial values.	100%	
Output 4: Feasibility of designing and implementing PES scheme for communities in planted forests areas		
Activity 4.1: Determination of current and expected governance structures.	100%	

Activity 4.2: Determination of opportunities & challenges for PES and mechanisms for dealing with challenges.	100%	
Activity 4.3: Determination of equitable benefit sharing mechanism.	100%	
Activity 4.4: Validation of results and compilation of report	100%	
Activity 4.5: Registration of plantation established by local communities for benefit sharing.	100%	Additional activity

3.2 Project duration

The project commenced in March 2012. The planned duration was 36 months while the realized duration was 48 months.

3.3 Project budget

The total budget for the project is US$642,534.00. Out of this, ITTO contributed US$ 569,665 (Table 2) and the Government of Ghana (GOG) contributed US$72,869 (Table 2) for the purpose of the project implementation. Of the ITTO contribution, US$477,070 was originally to be realized for the project's implementation but was later revised downwards to US$ 420,000 following the 2016 financial challenges of ITTO. The remaining amount of US$92,595 was used by ITTO for i) ITTO monitoring and review (US$30,000); ii) ITTO mid-term and expert evaluation (US$15000); and iii) ITTO programme support cost (8%)(US$47595).

The realized amount from the ITTO contribution for the project implementation was released in five installments. The first installment of US$150,000.00 was received in March 2012, the second ($80,000.00) in November 2013; the third ($60,000.00) in September 2014; the fourth ($60,000.00) in March 2015 and the fifth ($70,000) and the last installment in October 2015 (Annex 1 and 2).

Table 2: Financial situation of the project (ITTO and EA contributions in US$)

Budget Components		**ITTO Current Budget (US$)**	**ITTO Modified Budget (US$)**	EA Budget (US$)
10	**Project Personnel**			7200
	11. National Experts (Long term)		-	
	11.1. Project Coordinator	25,200	22,400	
	11.2. Agroforester	12,500	11,500	
	11.3. Forester	29,500	21,500	
	11.4. GIS/Remote Sensing Expert	11,000	10,000	
	11.5. Socio-economist	18,000	15,500	
	11.6. Forest Technicians	20,750	20,500	
	12. Other Personnel		-	
	12.1. Secretary	12,600	11,600	

	12.2. Driver	10,800	9,800	
	12.3. Other Labour		-	
	13. National Consultants (Short term)		-	
	14. International Consultants		-	
		-		
	19. Component Total	**140,350**	**122,800**	
20	**Sub-contracts**			
	29. Component Total		**-**	
30	**Travel**			
	31. Daily Subsistence Allowance		-	
	31.1. National Experts/Consultants	75,900	75,900	
	32. International Travel		-	
	32.1. National Experts/Consultants	13,500	10,500	
	39. Component Total	**89,400**	**86,400**	
40	**Capital Items**			13400
	43. Vehicles	40,000	32,800	
	44.1 Computer Equipment (Computers, printer, scanner etc.)	10,000	3,922	
	44.2 Forestry Equipment (Clinometer, precision cutter etc.)	2,000	2,000	
	44.3 GIS/RS Equipment-HP Design jet Plotter & Format Scanner	26,000	9,021	
	44.4. Software - Google Earth Professional	3,000	3,000	
	49. Component Total	**81,000**	**50,743**	

50	**Consumable Items**			4500
	51.Raw materials (Satellites images, Seeds, Polythene sacs etc)	15,000	14,500	
	52. Spares (including vehicle maintenance)	22,500	22,500	
	53. Fuel & Utilities	28,120	28,127	
	54. Office Supplies	3,600	6,600	
	55. Media, Publication and Education	6,000	6,000	
	59. Component Total	**75,220**	**77,727**	
60	**Miscellaneous**			3000
	61. Sundry	30000	26,000	
	62. Auditing	3600	4,800	
	63. Steering Committee/Close Out Workshop	7500	8,500	
	64. Incentives to Local Communities	50000	43,030	
	69. Component Total	**91,100**	**82,330**	
70	**Executing management cost**			44769
Total		**477,070**	**420,000**	72869

4.Project outcome and target beneficiaries involvement

4.1 **Specific objectives achieved**

The achievement of the specific objective has been assessed following the outcome indicators specified in project document as

Outcome indicator # 1 and 2: Management options and strategies identified; and management plans established

In the identification of the management options and strategies and the implementation, the following activities were carried out: i) determination of the state of forest cover and land use types in the study area; ii) mobilization of stakeholders, iii) determination of indigenous knowledge on options and strategies, iv) determination of management options and strategies, v) building the capacity of local communities in available options and strategies, vi) development of management plans; vii)

implementation of management options, strategies and monitoring mechanisms. The determination of the state of forest cover and land use types in the study area has been done. A technical report following ITTO guideline has been produced. The title of the technical report is **Land cover change of plantation established with local communities in degraded forest reserves in three districts, Ghana.**

The main findings in this report are **t**hat there is an appreciable amount of forest cover increase in most of the plots of plantation that the communities have established under the project. Despite this, an appreciable amount of grass and farmlands have also been observed in some of these plots of plantation. For instance, a significant amount of grass and farmlands have been observed in Nsugunsua community's plots owing largely to frequent bush fires and the continuous farming that is being done in the old plots (i.e.2001 to 2004 phase I plots). The cause of the visible presence of the grasslands in the remaining of the plots particularly, in the Ntabene, Twumkrom and Abonsrakrom communities' phase I (2001-2004) plots in the Brong Ahafo region is a result of the incidence of bush fires on these plots at one point in time. The difference can be observed in the Olantan community's phase I (2001-2004) plots in the Begoro forest district in the Eastern Region where there have never been incidence of bush fire and the forest is recovering very fast. There is still close forest adjacent to these plots and that is probably one important factor that prevents the incidence of bush fires on these plantations. Owning to this, efforts need to be made to prevent incidence of bushfire in these established plantation as well as in the surrounding areas. Minimizing the continuous farming activities in these established plantations and restocking through replanting the burnt out areas that have been turned into the grasslands, particularly in the phase I (2001-2004) plots, will greatly help to increase and sustain the forest cover areas in these plots.

The determination of the knowledge on options and strategies has been done. A detailed study was done using focus group discussions, and questionnaire survey of farmers engaged in the project activities. A technical report has been produced on this with the following title **Local knowledge on tree values and strategies for managing smallholder forest plantations in three reserves, Ghana.** A journal article on the same topic has been prepared and submitted to the Journal of forests, trees and livelihood. The main findings of this report are that improvement in water quality as a result of the forest plantation was rated as most important by the communities. Timber value, food gathering and medicinal plants supply from these plantations are also rated most important whilst tourism/recreation, cultural and spiritual uses of these plantations were rated as the least important. The water quality benefit was again ranked as the most important amongst forest values identified.

Farmers contributed valuable suggestions on strategies to manage established plantations. They were of the view that effective collaboration between community members and FSD staff holds prospects for fostering a united front to battle further degradation of forests. Again, timely supply of logistics pertinent to plantation establishment and maintenance is crucial to the successes of small holder plantations. Farmers in Dormaa communities stressed on the need for innovative fire management approaches to curb recurrent wildfires whilst their counterparts in Begoro and Offinso highlighted the need for the benefit sharing document to be signed so as to allay their fears regarding tree tenure. Regular interactions between stakeholders were also considered key to the identification, discussion and resolution of emerging issues concerning such small holder plantations.

Management options for the established plantations have been identified through a study under an MPhil thesis by a student in the Natural Resources and Environmental Governance programme at the Kwame University of Science and Technology (KUNST). The title of the thesis is **Environmental values from plantation forests: a study of Ghana's modified taungya system in Dormaa Forest District**. This thesis has been completed and the main findings regarding the management options are that careful management is required to ensure the continuous provision and flow of plantation forest environment services. Among identified management options were fire management strategies. It was found that incentivizing farmers is critical to making fire prevention strategies effective. Alternative livelihood, plantation maintenance and tackling illegal logging were amongst the most important management options for the established plantations. The study also highlighted the need to include more stakeholders in the implementation of management options. The need to delineate each stakeholder's role in management of these forest plantations was also deemed very necessary. Including the management of

forest environmental services in the management plans and defining ownership of these services were seen as ways of avoiding future conflicts. From this study a Journal article on **valuing benefits of small holder forest plantation with choice experiments, Ghana,** has been prepared and submitted to the Journal of Forest Economics.

The identified management options and strategies for managing the established plantation have been disseminated in these publications. Participating farmers, forestry staff, and the local communities have been sensitized on their importance. This information is being used in the design of the management plans for the sustainable management of these plantations and others outside the study area.

Outcome indicator #3: Sustainable management process established

In establishing the sustainable management process, the following activities were carried out under output 2; i) selection of timber species and NTFPs for plantation establishment; ii) development of capacity of local communities in the production of NTFPs and indigenous timber trees; iii) identification of suitable planting techniques for timber trees and NTFPs; iv) assessment of survival and monitoring growth rate of planted timber trees and NTFPS.

Upon the development of the capacity of participating farmers in the project on indigenous seeds collection, nursery establishment, and transplanting and management, they have been guided to plant the NTFPs and indigenous timber trees in all the 6 project sites. These include Ntabene, Twumkrom and Abonsrakrom in the Pamu Berekum Forest reserve in Dormaa forest district; Nsugunsua in the Afrensu-Brohoma Forest reserve, Offinso forest district; Olantan and Ahenkwa in the Southern Scarp Forest reserve in Begoro forest district (Figure 1). The cumulative number of hectares of plantation established with 47 indigenous timber tree species with one exotic species in the earlier (first) phase and the second phase of this project, is 224.884ha. This is distributed as follows; Nugunsua community plantation 44.652 ha; Abonsrakrom community plantation, 76.208 ha; Ntabene community plantation, 24.774 ha; Twumkrom community plantation 26.558 ha; Ahinkwa community plantation, 21.442 ha and Olantan community plantation,31.250ha. In the second phase of this project, 5 different species of NTFPs have been integrated in the established plantations particularly in the Dormaa project sites. They included i) Piper guineense, ii) Xylopia aethiopica, iii) Synsepalum dulcificum, iv) Myristica fragrans and v) Nephelium lappaceum.

Figure 1: Planting and management of forest plantation established by local communities in six project sites, Ghana

To further ensure the sustainable management process, the following activities were carried out under output 3; i) identification and mapping of key ecosystem services, ii) building the capacity of local communities in determination of forest carbon stocks; quantification of key ecosystem services, economic valuation of key ecosystem services, iii) identification of methodology for predicting the financial values timber trees before final rotation; iv) application of methodologies to determine financial value.

The ecosystem services in the established plantations were quantified. The ecosystem services in and around the established plantations were identified in collaboration with the farmers engaged in the implementation of the project activities. In measuring these ecosystem services, capacity of farmers was built in the process. A technical report was produced on this on **Economic Valuation of Ecosystem Services of Community Plantations in Degraded Forest Reserves of Tropical High Forest Zone of Ghana.** The main findings of this report are that maintaining the degraded natural forest for the next 30 years from conversion to plantation, the local communities would incur a total opportunity cost of 310.56 US$/ha in net present value from forgone stumpage revenues of commercial and non-commercial timber harvesting. This forgone revenue accounts the lowest share, which is about 2.8%, to the total direct on-site opportunity costs of conserving the forest into plantation, and the highest share (about 82%) was accounted by the forgone net income from crop production that could be generated in the early years of plantation establishments. The low return from timber is partly due to the fact that stumpage fees in Ghana are administratively set very low.

This study indicated that maintaining the degraded natural forest reserves for the next 30 years from conversion to plantations and agroforestry land uses imply opportunity costs of 1727.53 $/ha in net present value from non-timber forest product use restriction to local communities. This value accounted 6.70 to 15.57% of the total direct on-site opportunity cost of not converting the degraded forest reserve to the alternative land uses.

Further, the report indicated that maintaining the degraded natural forest reserves for the next 30 years from conversion to agroforestry land uses imply an opportunity cost of as low as 12156.53 $/ha and as high as 24115.54 $/ha in net present values of forgone crop production by local communities. These values account the largest share (about 86.82 to 93.56%) to total direct on-site REDD+ opportunity cost of not converting the degraded forest to agro forestry land uses. Thus, most of the opportunity cost of not converting the degraded natural forest to either plantation or agroforestry land use options are incurred by rural communities in terms of the foregone net benefits from crop production and non-timber forest product use restrictions on the degraded natural forest reserve.

This study indicated that enriching degraded natural forest reserves with community plantations could enhance the carbon stock in biomass and soil by about 190 tCO2e/ha whereas maintaining the degraded forest from conversion to agroforestry land uses could result in emission reductions in the range of 29 to 107 tCO2e/ha. These levels of emission reductions are the lower bound estimates for the fact that our study did not take into account the carbon sequestration services associated with the land use changes, mainly plantation.

The study also indicated that the conversion of degraded natural forest to plantations could increase tree species diversity. We recorded more number of tree species and plants species of non-timber forest

product sources in the community plantations than degraded forest and agroforestry land uses in the study area. The community plantations studied contain more than 54 tree species with 5cm and above in diameter and contain richer non-timber forest product source plant species diversity than the other land uses. Moreover, the soils of the plantation sites contain about an extra 583 kg available nitrogen nutrient per ha than the threshold level reported as indicator of forest soil health. However, both potassium and phosphorous nutrient levels available in the soils of the plantation sites were found to be below the minimum threshold levels.

To sum up, converting the whole 390,000 degraded forest reserve in the HFZ of Ghana to plantation could provide a global public good of emission removal of 74.16 million tCO_2e. Whereas the direct on-site opportunity cost of inaction would be about US$ 3.23 billion in NPV at 3% discount rate to rural communities and local authorities in Ghana. The total opportunity cost would be either higher or lower than this for the fact that our estimate did not take into account two main important factors that would affect the value. These are: 1) net difference in carbon sequestration service between the plantation and the degraded forest reserve, which is likely to be positive and hence increase emission removal level above our estimate, and 2) the indirect opportunity costs associated with not converting the degraded forest reserves to plantation were not taken into account in this study, which include for example the value added forgone by all actors in the supply chain of firms using timber as major input in their production process, due to complete restriction of timber logging from the degraded forest reserve area. Further studies should take into account the carbon sequestration services and indirect costs associated with maintaining the degraded forest from conversion to plantation.

Further, methodology for predicting the financial values of timber trees before final rotation was identified and the method applied to determine the financial values of the timber trees in the established plantation. A technical report has been produced on this on **Analysis of financial values of tree-level lumber in community forests plantation in two reserves of Ghana.** Aside this, calculator (Figure 2) has been developed for the farmers to use in estimating the lumber of value of the timber trees in their plantation. The main findings from the technical report are that, a total of 47 wood species were planted with only one exotic species (*Cedrella odorata*) in the study plantations established by the local communities. The species were classified according premium, commercial, lesser-used and lesser-known wood species. Wood species that were available at all the four communities included *Albizia adianthifolia, Altsonia boonei, Cedrella odorata, Ceiba pentandra, Ficus exasperate, Milicia excelsa, Sterculia tragacantha, Terminalia ivorensis* and *Terminalia superba*. The values of the trees, on species basis, have been estimated and calculators for future estimations developed for each community (Figure 2). The estimated values of the wood species were arrived at using the lumber prices of sawmill and chainsaw (bush cut) on the domestic timber markets that had been established in the regions that the communities are located. Statistical analysis indicated insignificant differences between sawmill and chainsaw lumber prices at Ntabene and Ahenkwa communities while differences existed for Twumkrom and Olantan communities. All the communities have been trained in the use of the calculator for plantation trees value estimations. The total values of the standing trees for all species developed at Ntabene, Twumkrom, Olantan and Ahenkwa were estimated to be GHC114,874; GHC147,328; GHC396,614 and GHC1,048,526 respectively for sawmill prices and GHC76,815; GHC114,933; GHC291,454 and GHC545,527 for chainsaw (bush cut) prices in the same order.

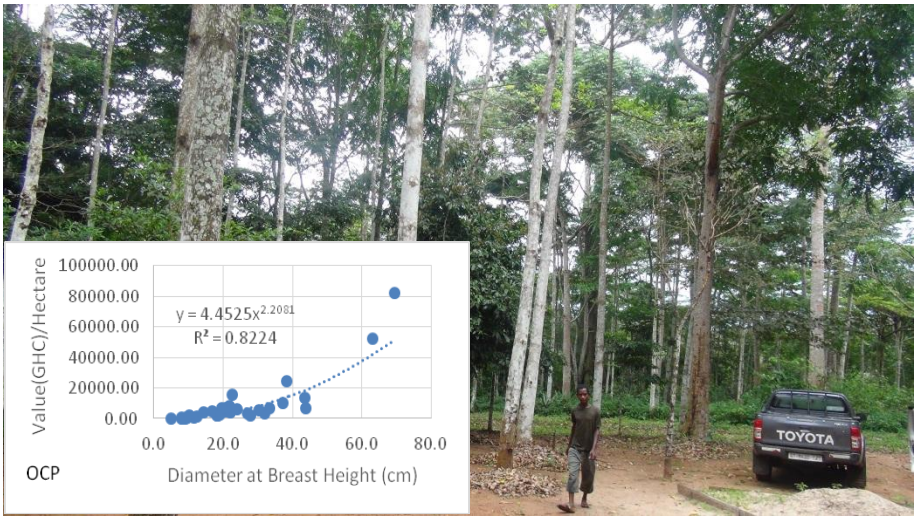

Figure 2: Lumber value calculator for Olantan community in Begoro forest district project site.

To further establish the management process of the plantation, the following activities were executed under output 4. They include i) determination of current and expected governance structures; ii) determination of opportunities and challenges for PES and mechanisms for dealing with challenges; iii) determination of equitable benefit sharing mechanism; iv) validation of results and compilation of report, and v) registration of plantation established by local communities for benefit sharing

The determination of current and expected governance structures for the plantation have been done. This is obtained largely from the student thesis on **Environmental values from plantation forests: a study of Ghana's modified taungya system in Dormaa Forest District**. The major findings from this study relating to expected governance structures for the established plantations are the need for setting up feasible monitoring system to promote accountability, particularly with regard to the address of timber theft occurring in the plantations. The study also recommends the strengthening of institutional arrangement to enhance the governance of the established plantations. The study recommends that the accountability aspect be given special attention in order to dispel the mistrust farmers have for the FSD officials and also improve on the working relationship between these two stakeholders. The study further recommends that attention be paid to mechanisms and institutions used in compensating farmers for their contribution in implementing fire management strategies in the study area

The determination of the opportunities and challenges for PES and mechanisms for dealing with the challenges has been done. A paper has been prepared on it, titled **Carbon mitigation potential of community forest plantation: lessons on institutional arrangements and challenges.** This study determined the carbon mitigation potential of the small holder plantation established by the local communities. The institutional and governance arrangement required for the sustenance of these plantations have been determined. Biophysical data has been collected from sample plots located inside and outside the forest plantations that the communities have established. The net carbon stored in these plantations is obtained. The monetary value of the stored net carbon has been determined through a review of the voluntary and REDD+ carbon markets. An average CO_2e per ton from similar forest plantations has been sought in order to determine the monetary value of the net carbon. Alongside, institutional arrangements required to govern these forest plantations for the carbon finance has being reviewed. The challenges in managing such plantations for the carbon benefits have also been reviewed. Additional work for this activity involves the presentation of the results to the relevant stakeholders and experts. The purpose for this is to validate its findings and firm up the governance structures and equitable benefit-sharing mechanisms for these forest plantations.

The registration of plantation established by local communities for benefit sharing has been done(Figure 3). In doing this, the following activities have been carried out. i) Mobilization and sensitization of target farmers in the target communities; ii) Record data (bio-data, photos, plots sizes and species planted, year of planting) of target farmers in the six (communities) in the three (3) forest reserves; iii) Production of maps of the twelve (12) plots of plantations established by the farmers under the FORIG/ITTO Degraded Phase II project in soft and hard copies; and iv) Prepare a composite report/document involving the three outputs and submitted to the national plantation office in Accra with copies at FORIG/ITTO project office

Figure 3: Sensitization of farmers and records of their biodata for the benefit share document preparation

Over 180 farmers engaged in the plantation establishment in the six project sites in the phase I and II of this project since 2001 have been assisted to register their plots of plantation with the government.

The final document prepared as the benefit share document include i) the contract document (one attached earlier in POLMs as a technical report) and ii) a document printed on special paper that contains information about the name of the farmer, passport size photograph of the farmer, name of community, plot size, a map of the plot, species planted and year of planting. These documents have prepared for the participating farmers in each of the six communities and produced in six copies each. The remaining activity to complete this work which is in progress currently are i) the signing of these documents at the FC head office in Accra, ii) distribution of signed document to relevant stakeholders i.e. respective forest district managers of the FSD, the CSIR- FORIG-Execution Agency, RSMC plantation office, participating farmers in the project communities and iii) presentation of the content of these documents to participation farmers

4.2 Existing situation at project completion vs pre-project situation

The tangible outcomes of the project are

i. State of forest cover and land use types in the study area has been determined. A technical report has been produced on Land cover change of plantation established with local communities in degraded forest reserves in three districts, Ghana. In the report, it shows an appreciable amount of forest cover increase in most of the plantation plots that the communities have established under the project. Despite this, an appreciable amount of grass and farmlands have also been observed in some of these plots of plantation.

ii. Methodology for predicting the financial values of timber trees before final rotation was identified and the method applied to determine the financial values of the timber trees in the established plantations. From this, a calculator has been developed for the farmers to use in estimating the lumber value of the timber trees in their plantations.

iii. Local knowledge on options and strategies has been determined. A detailed study was done and technical report produced on Local knowledge on tree values and strategies for managing smallholder forest plantations in three reserves, Ghana**.** A journal article on the same topic has been prepared and submitted.

iv. Management options, techniques, strategies and governance lessons for engaging local communities to restore degraded forest reserves have been developed. These have been achieved through capacity building of communities on seed collection; nursery establishment; tree planting; facilitating the inventory and registering the trees planted and farmers involved.

v. Over 180 farmers engaged in tree planting on the degraded forest reserves have their plots of plantation registered with the government. Over 224 ha of plantation have been established and distributed in three degraded forest reserves in the project sites. Over 47 different timber species and one exotic timber species have used in the planting. Five different NTFP species have been integrated in portions of the planted forest. The benefit share documents are to be handed over to the relevant authorities including, the farmers, the traditional authority and Forestry Commission of Ghana (Forest Services Division, Plantation development office in Accra and the plantation office at the RSMC in Kumasi). These provide Lessons on mainstreaming PES activities into SFM, because they will enhance forest carbon stocks and improve biodiversity, watershed conditions and other environmental services.

vi. The economic value of the ecosystem services in and around the established plantations in the project areas have been estimated. The conclusion on this is that, converting the whole 390,000 degraded forest reserve in the HFZ of Ghana to plantation could provide a global public good of emission removal of 74.16 million tCO_2e. Whereas the direct on-site opportunity cost of inaction would be about $ 3.23 billion in NPV at 3% discount rate to rural communities and local authorities in Ghana. Further studies should take into account the carbon sequestration services and indirect costs associated with maintaining the degraded forest from conversion to plantation. This has been done through detailed study that has been well packaged in a detailed technical report. This report has formulated key policy implications and recommendations to improve the PES in the project area and in similar areas inside and outside the country.

vii. The determination of the opportunities and challenges for PES and mechanisms for dealing with the challenges has been done. A paper has been prepared on **Carbon mitigation potential of community forest plantation: lessons on institutional arrangements and challenges.** This study determined the carbon mitigation potential of the small holder plantation established by the local communities. The institutional and governance arrangement required for the sustenance of these plantations have been determined. An MPhil thesis on this theme has also been produced titled **Environmental values from plantation forests: a study of Ghana's modified taungya system in Dormaa Forest District**. Journal article on this study has been produced on **valuing benefits of small holder forest plantation with choice experiments, Ghana,** and submitted to the Journal of Forest Economics. The major findings from this study relating to expected governance structures for the established plantations are the need for setting up feasible monitoring system to promote accountability, particularly with regard to the address of timber theft occurring in the plantations. The study also recommends the strengthening of institutional arrangement to enhance the governance of the established plantations. The study recommends that the accountability aspect be given special attention in order to dispel the mistrust farmers have for the FSD officials and also improve on the working relationship between these two stakeholders. The study further recommends that attention be paid to mechanisms and institutions used in compensating farmers for their contribution in implementing fire management strategies in the study area.

4.3 Involvement of project beneficiaries

The primary beneficiaries of the project are the local communities in the local communities in the three forest districts around the degraded forest reserves where the project activities are implemented, the district forest managers and their technical officers of the Forest Services Division of the Forestry Commission of Ghana. Their involvement is summarized as follows

- The local communities participated in the implementation of the activities of the project. They were involved in all the capacity building and education programmes, plot demarcation in degraded forest reserves and preparation, seedlings productions, seedlings planting and maintaining planted trees, survey data collection by responding to questionnaire and participating in focus group discussions, monitoring deforestation and forest degradation related activities in the landscape in the project area. They were also involved in the project steering committee meetings and project monitoring missions undertaken by ITTO.
- The district forest managers and their technical officers of the Forest Services Division were involved in almost all project activities implementation. These include the survey data collection, focus group discussion, plot demarcation on degraded forest reserves, distribution of seedlings to farmers, farmers and registration of their planted trees for the benefit sharing. The District Forest Managers were also involved in project steering committee meetings
- The FSD staff was involved in the project through the tree inventory and registration of farmers, documenting these registrations and keeping safe to be used in future to ensure farmers get their share of the timber proceeds.

4.4 **Project sustainability after completion**

The executing agency has worked very hard to realize all the activities specified in the project document. These have been done through detailed studies, demarcation of plots in degraded forest reserve for farmers, seedlings production, distribution, planting and registration of the trees planted for the farmers, identification of strategies and management options and capacity building of the local communities in the project area. These have been done in close collaboration with the relevant stakeholders in the country including the local communities, Forestry Commission of Ghana (Forest Services Division of the Forestry Commission of Ghana), District Authority and the administration of stood land authority.

To continue with the outputs of the project,

i) the District forest managers and their technical officers of the Forestry Commission of Ghana, will continue to work with the local communities in the project sites with the implementation of the strategies and management options identified for sustainable management of the established plantations.

ii) The district assembly/authority of project area is also to offer local communities with support both financial and logistics for their activities that include wildfire control, illegal timber harvest control and control of Fulani head men and their cattle grazing and destruction of the established plantation.

iii) The FSD and the technical officers are also to continue to support the project farmers and other communities with the planting and maintenance of the trees on the degraded forest reserves. This support is to be related to release of portions of degraded forest reserves for the farmers on the project, seeds and seedling acquisition by farmers for the planting including securing tenure security (registration for the farmers) and education on good silvicultural practices and conflict resolutions.

iv) Continued publication and dissemination of the research results of the project is being done by the executing agency and its collaborators to ensure replications and scaling up of research to address DFD in and outside Ghana.

v) The executing agency will continue to use the project sites as a research site for long-term studies on forest carbon accounting; assessment and monitoring of land use changes, and forest resources modeling.

5.Assessment and analysis

5.2 Project rationale and identification process

The project is implemented in the degraded portions of three forest reserves representing different forest ecological zones. The reserves are Pamu-Berekum Forest Reserve representing the dry semi-deciduous forest ecological zone in the Dormaa forest district; Afrensu-Brohoma Forest Reserve in the dry semi-deciduous fire zone subtype in the Offinso forest district; and Southern Scarp Forest Reserve of the moist semi-deciduous southeast forest subtype in the Begoro forest district. The continuous deforestation and forest degradation in these reserves caused largely by illegal logging and illegal chainsaw operations, encroachment for farming,and human-induced wild fires, have led to the identification, development and implementation of this project. The identification of the project was done in detail. It involved stakeholders before and during the implementation of the project. The identification process coincided with the modified taungya system (where trees are interplant with foods on degraded portion of forest reserve) and the development of national REDD policy in the country. As a result, understanding of the issues to be tackled by the project was in-depth, while the issues addressed were relevant and consistent to the need of the local communities closed to these reserves, the FSD of the Forestry Commission of Ghana and the national REDD secretariat.

5.2 Problem addressed, objectives and implementation strategy

The vegetation types in Ghana, except for those in the savanna, are considered tropical forests and play very important role in supporting the livelihood of many Ghanaians and the rural communities as a whole. However, the combined effect of over-exploitation of forest resources, unsustainable farming practices, wild land fires and mining activities have significantly reduced the forest area and degraded nearly 32% of the reserved forests and over 70% of the forests outside reserves. The continuing forest loss at an annual rate of 1.7 % threatens the existence of the indigenous tree species and associated biodiversity through habitat loss and accelerated soil erosion, thus affecting the agricultural productivity on which the livelihoods of rural people depend. Sustaining the diversity of the tree species and the value of the natural forest is a matter of increasing concern not only for Ghana but for the entire West Africa region. Following from this, the key problem addressed was that forests established by local communities by rehabilitating degraded forests are not collaboratively and sustainably managed. The specific objective is to collaboratively and sustainably manage with local communities, forests established by rehabilitating degraded forests. The development objective was to contribute to forests established by local communities through rehabilitation of degraded forests become one of the major sources of livelihood and improves landscapes.

The strategy applied in implementing the project is Knowledge-Empowerment-Governance approach with the following project elements

Output 1: Management options and strategies identified and implemented

- Determination of the state of forest cover and land use types in the study area
- Mobilization of stakeholders
- Determination of indigenous knowledge on options and strategies
- Determination of management options and strategies
- Building the capacity of local communities in available options and strategies
- Development of management plans
- Implementation of management options, strategies and monitoring mechanism

Output 2: The diversity and density of indigenous timber species and NTFPs in plantations increased

- Selection of timber species and NTFPs for plantation establishment
- Development of capacity of local communities in the production of NTFPs and indigenous timber trees
- Identification of suitable planting techniques for timber trees and NTFPs
- Assessment of survival and monitoring growth rate of planted timber trees and NTFPs

Output 3: Financial value of timber species before final rotation and environmental services including carbon stocks determined

- Identification and mapping of key ecosystem services
- Building the capacity of local communities in determination of forest carbon stocks
- Quantification of key ecosystem services including forest carbon
- Economic valuation of key ecosystem services
- Identification of methodology for predicting the financial values of trees before final rotation

Output 4: Feasibility of designing and implementing PES scheme for communities in planted forests areas

- Determination of current and expected governance structures
- Determination of opportunities and challenges for PES and mechanisms for dealing with challenges
- Determination of equitable benefit sharing mechanism
- Validation of results and compilation of report

5.3 Critical differences between planned and actual project implementation

As indicated in section 3, no change has been made to the development objective, specific objective and the outputs. Most of the planned activities were unchanged. The only additional activity was inserted under output 4. The additional activity that led to the modification was activity 4.5: Registration of plantation established by local communities for benefit sharing. The addition of this activity came as a request from the farmers in the project site. The request was discussed and endorsed at the project steering committee meeting. From the forgoing, the difference between the planned and actual project implementation was not significant. The little addition improved the project's outcomes and sustainability.

5.4 Adequacy of time and project inputs

The project was implemented according to the planned schedule. The project commenced in March 2012. The planned duration was 36 months while the realized duration was 48 months. The actual duration was extended for 9 months to enable the successful execution of the project activities, particularly the additional activity that had to do with the registration of plantation established by local communities for benefit sharing.

The total expenditure for the project is US$642,534.00. Out of this, ITTO contributed US$ 569,665 and the Government of Ghana (GOG) contributed US$72,869 for the purpose of the project implementation. Of the ITTO contribution, US$477,070 was originally to be realized for the project's implementation but was later revised downwards to US$ 420,000 following the 2016 financial challenges of ITTO. The realized amount from the ITTO contribution for the project implementation was released in five installments and accordingly spent on the execution of the project activities.

5.5 External influences

The assumptions made concerning the implementation of the project were valid during the duration of project implementation. For instance, the aim of the project was to contribute to rural livelihood by improving benefits from forests established by local communities through rehabilitation of degraded forests. It was assumed that the major stakeholders – the FSD on one hand and the local communities on other hand – would not cooperate to bring about the achievement of this objective because conflict regarding the use of the forest goods and services was anticipated to arise between these two major stakeholders that manage the established plantations in these forest reserves.

The measures of mitigation outlined in the project document were effective in minimizing this conflict in most cases during the duration of the project. The local communities undertook the activities of the project on the field, participated capacity building training, and applied skills and knowledge acquired in the sustainable management of the established plantations, particularly areas portions of the degraded forest reserves that they help to rehabilitate. The FSD on its part mobilized local communities to undertake the project activities. For instance, the FSD managers and their respective technical officers supported local communities with the allocations of degraded portions of reserves and guided

communities to plant the tree seedlings they assisted them to raise from the community's nurseries. The FSD further assisted farmers to register the planted trees with the relevant authority (Government). The two stakeholders worked together to implement the project activities in the area.

5.6 Project beneficiaries

The primary beneficiaries were the local communities (see annex 3 and 4) within the degraded forest reserves (Table 5.6) and the Forestry Services Division. Each of these was actively involved in the project implementation.

Table 5.6 Project communities and total hactares rehabilitated

COMMUNITY	FOREST RESERVE	PHASE I/HA	PHASE II/HA	TOTAL AREA REHABILITATED/HA
OLANTAN	Southern Scarp	11.295	19.961	**31.256**
AHINKWA	Southern Scarp	13.189	8.253	**21.442**
NSUGUNSUA	Afrensu Brohuma	24.321	20.331	**44.652**
ABONSRAKROM	Pamu Berekum			**76.2**
TWUMKROM	Pamu Berekum			**26.6**
NTABENE	Pamu Berekum	24.8	24.8	**49.6**
205 FARMERS	**Total (Ha)**			**249.75**

The local communities did the field work relating to planting and maintaining of trees on the degraded forest reserves, participation in capacity building trainings and application of these skills and knowledge in the sustainable management of the landscape in the project area.

The staff of the FSD represented by the district forest management also contributed to the project's implementation. They mobilized local communities to implement project activities, participate in different studies of the project, e.g. socioeconomic and biophysical data collection, training workshops and steering committee meetings.

The other beneficiaries included the traditional authority that supported the tree planting on their lands, the FSD that manages timber trees in and outside forest reserves in Ghana. The District Assemblies (Local government authority) from the Administrative districts of the project area who are in charge of the overall development of the districts, relating to construction of access roads to project sites among others. The National REDD Secretariat of the Forestry Commission of Ghana in charge of development of emission reductions plan and the national REDD architecture. The Ministry of Lands and Natural Resources (MLNR) in charge of the development of policy framework to manage the land and tree resources will also benefit from the results of this project. All these stakeholders will make use of the results and findings developed from the project.

5.7 Sustainability

The inventory and the registration of farmers and their trees planted in the degraded forest reserves that have been done under this project have raised the interest of farmers in this activity. A lot more farmers in and outside the project communities have shown interest in this exercise and are requesting for portions of the degraded forest reserves to plant food crops and the timber trees. Farmers already engaged in the replanting of the degraded portions of the reserves under this project are further requesting for additional portions of the degraded forest reserves to expand their plots of established plantation through additional planting. These requests for additional portions of the degraded forest reserves were made at the project internal evaluation meeting by farmers. The FSD in the various project's forest districts are to fill this gap by allocating portions of degraded forest reserves and supporting farmers with the tree seedlings to sustain this activity through the Forest Investment Programme (FIP) under the Forestry Commission of Ghana (FC).

In estimating the financial value of timber species before final rotation, the economic value including carbon stocks of the established plantations and determining feasibility of designing and implementing PES schemes in the planted forests areas for communities under this project; sample plots for biophysical data collections have been laid, land cover change maps have been produced, the baseline carbon stocks of the project site have been produced, community lumber value calculators have been produced and communities trained on their use to estimate the value of the value of their standing trees before harvesting. These are important methods, technologies, strategies and information obtained from the project that are relevant for monitoring carbon emission reduction activities in and outside the project sites. The lumber calculators developed for the communities are also beneficial for both farmers on the project and those outside the project area to use to estimate the value of the trees planted particularly outside the forest reserves. The national REDD secretariat supported by FSD would make use of these in the development of emission reduction plans for Ghana. They will make use of these to monitor the deforestation and forest degradation, and the carbon stock in and outside the project area to validate the national carbon emission reductions strategies and designs. Equally, the Ministry of Lands and Natural Resources and the FSD will also make use of the lumber value calculator to strengthen the reforms being made regarding the handover of the collections of some fees on trees on farmlands outside forest reserves to local communities.

In order to consolidate the developed methodologies, technologies, strategies, and research findings obtained from the project and sustain the tree planting interest among and outside the project farmers; a new project needs to be developed. The purpose for this new project, whilst aiming to consolidate the activities of the earlier project, should aim at developing a PES scheme on these plantations for the farmers.

5.8 The institutions involved

The institutions involved in the project implementation were;

The local communities and their roles and responsibilities were the implementation of project activities on the field relating to replanting portions of the degraded forest reserves and protecting the earlier established plantations against theft and wildfire.

The staff (technical officers and forest guards) of the FSD represented by the district forest management also contributed in the project implementation. Their role and responsibilities were also appropriate and they performed them satisfactorily.

The other institutions involved in the project included the traditional authority that supported the tree planting on their lands.

The District Assemblies (Local government authority) from the Administrative districts of the project area also had a role to play in terms of the overall development of the districts including the project areas.

6. Lessons learned

i. Create green fire break around established plantation

ii. Employ GIS to generate land cover change maps of established plantation to support monitoring

iii. Strong commitment from resources managers to control illegal logging and farming required

iv. Functional small holder nursery with water availability is required

v. Sustain farmer interest and commitment to maintain and expand plantation through sale of carbon credit from plantations/ PES

vi. Support farmer group to acquire benefit share contracts with tree resource owners

6.1 Project identification and design matters

The location of the project activities in the degraded portions of the forest reserves, particularly in the targeted zones, which is the study site of the project, has been useful in addressing the restoration challenges in these degraded forest reserves. The project was timely initiated to help the local communities in these communities closed to these reserves in their task of addressing the restoration challenges in this area.

The partnership between the local communities and the FSD within MTS for rehabilitation of degraded forest reserves, apart from being a useful arrangement in ensuring the restoration and sustainable management of the degraded forest reserves, was also a very helpful medium in the identification process, development and implementation of this project. Within the MTS for rehabilitation of degraded forest reserves, the key problem of the project was thoroughly analyzed in collaboration with these two main stakeholders. The main and sub causes of the problem to be addressed were identified. The effects of this problem were also identified including the impacts. Following from this, thorough identification of the activities of the project was done to coincide with the sub causes. The main outputs were identified to coincide with the main causes and the specific objective identified to coincide with the key problem. The specific objective was carefully identified to contribute to the development objective of the project. The project design was very sound because, there were sufficient interventions including the outputs and corresponding activities to address the problem. To ensure sustainability of the project after completion, a sustainability plan was designed earlier, and presented to the project stakeholders at the last project steering committee meeting of this project. Areas for actions to be taken to ensure the sustainability were outlined and responsible stakeholders identified to take up these actions to ensure sustainability.

6.2 Operational matters

The executing agency of this project was the CSIR-Forestry Research Institute of Ghana (FORIG). The implementation of the project was participatory. The main collaborators were the local communities in the three different forest reserves that are the project sites, and the FSD of Forestry Commission of Ghana represented by the District Forest Managers and the technical staff at the three different district forest offices. The academic institutions – Kwame Nkrumah University of Science and Technology (KNUST), ITTO secretariat, the traditional authority, the local government authority (District Assembly) all collaborated. Their active collaboration and participation in project implementation ensured the smooth operation of the project.

The roles and responsibilities of these collaborators were spelt out at the beginning of the implementation of each specific activity of the project. This avoided confusion in the project implementation. Project documentation was carefully done. Technical reports were written following the guidelines of ITTO and other journal papers thoroughly written and published in Journals with high international reputations.

Monitoring and evaluations have been held satisfactorily, within the PSC meetings, chaired by the Director of the CSIR-Forestry Research Institute of Ghana and the project coordinator. Five to six of these PSC meetings have been held. These meetings have always been attended by members of the PSC to provide important guidance for the project operations.

Working with local communities on field activities associated with their livelihood and environment is a special exercise that requires special attention and understanding of the needs of these communities to be successful. The field monitoring by ITTO and the executing agency contributed significantly to the successful implementation of the planned project activities. During those monitoring exercises, challenges associated with the implementation of the project were identified earlier and addressed, local communities encouraged to continue to work on the project and their needs related to the project were also identified and addressed. For instance, it was during these monitoring exercises that the activity on the registration of plantation established by local communities for benefit sharing was identified and carried out.

The inputs of the project were timely transferred to the executing agency based on the submission of the yearly plan of operations. The funds transfer which was sufficient in quantity and quality based on the revised ITTO budget towards the tail end of the work was done in five installments.

7. Conclusions and recommendations

7.1 Conclusions

- The partnership between the local communities and the FSD within the MTS structure that worked for the effective restoration and sustainable management of the established plantations was a very important arrangement used in the identification, development and implementation of this project.
- The key problem of the project was thoroughly analyzed in collaboration with the stakeholders and the main and sub causes were related to the problem addressed.
- The project design was very sound because, there were sufficient interventions including the outputs and corresponding activities to address the problem.
- The project implementation was smoothly done largely because of the participatory strategy applied. The key sources of this smooth implementation were the cooperation between local communities and different collaborators, the dedicated project management team, the able PSC and the helpful and cooperative support from ITTO secretariat.
- The needs, concerns and suggestions of the local communities, who were the primary beneficiaries were duly considered at every stage of the project's implementation.
- The project was managed in full compliance with existing ITTO rules and procedures. Employment of project personnel, national and international consultants as well as procurement of capital items were made based largely on approval of ITTO.
- The specific objective of the project has been fully achieved through delivery of all planned outputs and execution of the activities pertaining to individual outputs.
- The project results have been disseminated through the meetings of the PSC, poster presentations, publications in international and domestic journals and presentations at international conferences.

7.2 Recommendations

- The key problem to be addressed by a proposed project must be adequately analyzed in the best way that correctly identify relevant main-causes and sub-causes of the problem as the basis for defining relevant project elements and intervention.
- In achieving the soundness of a project design, it should be closely linked with adequacy of problem analysis.
- Roles and responsibility of the stakeholders need to be identified and assigned prior to the implementation of each activity of the project. This helps to forestall any risk and confusion and brings about smooth implementation of the project.

- It is advisable to put together, a well dedicated project management team, ensure timely availability of inputs in terms of funds and establish PSC to provide good counsel to project management team.
- It is also advisable a project is implemented in a participatory manner. This will engage the stakeholders and help create ownership and increase support to the project during its implementation and after completion.
- It is recommended a sustainability plan be drawn and discussed with the project stakeholders and partners. So that actions and programs to be taken to ensure sustainability of the project after completion are identified during these discussion sessions and the responsible institutions identified to make follow up on these actions and programs.
- Field monitoring by ITTO and the executing agency is required to ensure the successful implementation of the planned project activities. During those monitoring exercises, challenges associated with the implementation of the project need to be identified and addressed, local communities encouraged to continue to work on the project and their needs related to the project also identified and addressed.
- A new project that develop PES schemes on these established plantations for these farmers and others in the landscape need to be developed to consolidate the benefits of the project activities and the MTS as a whole.

Responsible for the Report

Name: Lawrence Damnyag (PhD) Position held: Project Coordinator

Signed:

Date: September 2017

Annex 1: Project financial statement

PROJECT FINANCIAL STATEMENT

Project No. PD 530/08
Rev. 3 (F)

Period ending on: 31ST
JULY 2016

Project Title: PHASE II OF ITTO PROJECT (PD 30/97 Rev.6 (F) MANAGEMENT OF FORESTS ESTABLISHED THROUGH REHABILITATION OF DEGRADED FORESTS BY LOCAL COMMUNITIES IN GHANA

	Component	Original Amount (A)	Modified Approved Amount (A)	Expenditures To-date			Available Funds (E) { A - D }
				Accrued (B) a/	Expended (C)	Total (D) { B + C }	
I.	**Funds managed by Executing Agency**						
10.	Project Personnel				$0.00	$0.00	$0.00
11.	National Experts (long term)	**$116,950.00**	**$0.00**	**$0.00**	**$112,630.63**	**$112,630.63**	**$4,319.37**
	11.1 Project Coordinator	25,200.00			$23,750.00	23,750.00	1,450.00
	11.2 Agro-Forester	12,500.00			$12,000.00	12,000.00	500.00
	11.3 Forester	29,500.00			$29,000.00	29,000.00	500.00
	11.4 GIS Remote Sensing Expert	11,000.00			$10,209.49	10,209.49	790.51
	11.5 Socio-Economist	18,000.00			$17,200.00	17,200.00	800.00
	11.6 Forest Technician	20,750.00			$20,471.14	20,471.14	278.86

	12	Other Personnel	**23,400.00**	**-**	**-**	**22,907.74**	**22,907.74**	**492.26**
		12.1 Secretary	12,600.00			$12,505.89	12,505.89	94.11
		12.2 Driver	10,800.00			$10,401.85	10,401.85	398.15
		12.3 Other Labour	-				-	-
	13	National Consultants(short term)	-				-	-
	14	International Consultant	-				-	-
	19	Component Total	**140,350.00**	**-**	**-**	**135,538.37**	**135,538.37**	**4,811.63**
	20	Sub Contracts				-	-	-
						-	-	-
	29	Component Total	-	-	-	-	-	-
30.		Travel						
	31.	Daily Subsistence Allowance	75,900.00		5,145.85	67,699.63	72,845.48	3,054.52
		31.1 National Expert(s)/Consultant(s)	75,900.00		5,145.85	$67,699.63	72,845.48	3,054.52
	32.	International Travel	13,500.00			4,799.67	4,799.67	8,700.33
		32.1 National Expert(s)/Consultant(s)	13,500.00			$4,799.67	4,799.67	8,700.33
	39.	Component Total:	89,400.00	-	5,145.85	72,499.30	77,645.15	11,754.85
40.		Capital Items						
	41.	Premises	-	-			-	-

	42.	Land	-	-			-	-
	43.	Vehicle(s)	40,000.00			$32,800.00	32,800.00	7,200.00
	44.	Capital Equipment	41,000.00	-	-	20,260.53	20,260.53	20,739.47
		44.1 Computer Equipment (specify)	10,000.00			$3,921.83	3,921.83	6,078.17
		44.2 Forestry Equipment (specify)	2,000.00			$0.00	-	2,000.00
		44.3 GIS/RS Equipment	26,000.00			$16,338.70	16,338.70	9,661.30
		44.4 Software-Google Earth Professional	3,000.00			$0.00	-	3,000.00
	49.	Component Total:	81,000.00	-	-	53,060.53	53,060.53	27,939.47
50.		Consumable Items						
	51.	Raw Materials	15,000.00	-	2,150.00	$11,522.24	13,672.24	1,327.76
	52.	Spares Including Vehicle Maintenance	22,500.00	-		$21,852.32	21,852.32	647.68
	53.	Fuel and Utilities	28,120.00	-		$24,978.10	24,978.10	3,141.90
	54.	Office Supplies	3,600.00	-		$3,459.91	3,459.91	140.09
	55	Media Publication and Education	6,000.00	-		$0.00	-	6,000.00
	59.	Component Total:	75,220.00	-	2,150.00	61,812.57	63,962.57	11,257.43
60.		Miscellaneous						
	61.	Sundry	30,000.00	-		$29,988.67	29,988.67	11.33
	62.	Audit Costs	3,600.00	-		$3,600.00	3,600.00	-
	63.	Steering		-		$6,751.11		

		Committee	7,500.00				6,751.11	748.89
	64	Incentives to Local Communities	50,000.00	-		$49,360.08	49,360.08	639.92
	69.	Component Total:	91,100.00	-	-	89,699.86	89,699.86	1,400.14
70.		National Management Costs				-	-	-
	71.	Executing Agency Management Costs	-	-		-	-	-
	72.	Focal Point Monitoring				-	-	-
	79.	Component Total:	-	-	-	-	-	-
		Sub-Total:	477,070.00	-	7,295.85	412,610.63	419,906.48	57,163.52
80.		Project Monitoring & Administration						b/
	81.	ITTO Monitoring and Review	30,000.00	-		-	-	30,000.00
	82.	ITTO Mid-term and Ex-post Evaluation	15,000.00	-		-	-	15,000.00
	83.	ITTO Programme Support Costs	47,595.00	-		-	-	47,595.00
	84.	Donor Monitoring Costs				-	-	-
	89.	Component Total:	92,595.00	-	-	-	-	92,595.00

90.	Refund of Pre-Project Costs (Pre-Project Budget)				-	-	-
	Sub-Total:	92,595.00	-	-	-	-	92,595.00
100.	GRAND TOTAL:	569,665.00	-	7,295.85	412,610.63	419,906.48	149,758.52

Note: Budget Components are those detailed in the Project Document.

a/ The **Cash Flow Statement must be completed first**, before the input into the Financial Statement.

b/ Accrued expenditure: expenditures incurred during the reporting period, but not yet settled.

c/ Amounts under the "Expended" column will be imported from the Cash Flow Statement (with direct link).

Annex 2: Cash flow statement

PROJECT CASH FLOW STATEMENT			
Project No. PD 530/08 Rev. 3 (F)		Period ending on: 31ST JULY 2016	
Project Title: PHASE II OF ITTO PROJECT (PD 30/97 Rev.6 (F) MANAGEMENT OF FORESTS ESTABLISHED THROUGH REHABILITATION OF DEGRADED FORESTS BY LOCAL COMMUNITIES IN GHANA			

Component	Reference	Date	Amount	
			in US$	Local Currency
A. <u>Funds received from ITTO:</u>				
1. First instalment		March 2012	$150,000.00	GHC 249,000.00
2. Second Instalment		Nov. 2013	$80,000.00	GHC 165,168.00
3. Third instalment		Sept. 2014	$60,000.00	GHC 179,400.00
4. Fourth instalment		March 2015	$60,000.00	GHC 218,400.00
5. Fifth instalment		Oct. 2015	$70,000.00	GHC 262,500.00
6. Sixth instalment				
Total Funds Received (A):			**$420,000.00**	**GHC 1,074,468.00**
B. <u>Expenditures by Executing Agency:</u>				
10. Project Personnel				
11. National Experts (long term)			**$112,630.63**	**GHC 279,129.73**
11.1 Project Coordinator			$23,750.00	GHC 67,370.49
11.2 Agro-Forester			$12,000.00	GHC 23,973.78
11.3 Forester			$29,000.00	GHC 75,207.48

		11.4 GIS Remote Sensing Expert			$10,209.49	GHC 24,322.16
		11.5 Socio-Economist			$17,200.00	GHC 47,293.24
		11.6 Forest Technician			$20,471.14	GHC 40,962.59
	12	Other Personnel			**$22,907.74**	**GHC 53,723.63**
		12.1 Secretary			$12,505.89	GHC 29,006.10
		12.2 Driver			$10,401.85	GHC 24,717.53
		12.3 Other Labour				
	13	National Consultants(short term)				
	14	International Consultant				
	19	Component Total			**$135,538.37**	**GHC 332,853.36**
	20	Sub Contracts				
	29	Component Total			$0.00	GHC 0.00
30.	Travel					
	31.	Daily Subsistence Allowance			$67,699.63	GHC 205,199.75
		31.1 National Expert(s)/Consultant(s)			$67,699.63	GHC 205,199.75
	32.	International Travel			$4,799.67	GHC 14,735.00
		32.1 National Expert(s)/Consultant(s)			$4,799.67	GHC 14,735.00
	39.	Component Total:			$72,499.30	GHC 219,934.75
40.	Capital Items					

	41. Premises				
	42. Land			$0.00	GHC 0.00
	43. Vehicle(s)			$32,800.00	GHC 55,432.00
	44. Capital Equipment			$20,260.53	GHC 69,734.42
	44.1 Computer Equipment (specify)			$3,921.83	GHC 7,228.01
	44.2 Forestry Equipment (specify)				
	44.3 GIS/RS Equipment			$16,338.70	GHC 62,506.41
	44.4 Software-Google Earth Professional				
	49. Component Total:			$53,060.53	GHC 125,166.42
50.	Consumable Items				
	51. Raw Materials			$11,522.24	GHC 39,872.36
	52. Spares Including Vehicle Maintenance			$21,852.32	GHC 73,626.32
	53. Fuel and Utilities			$24,978.10	GHC 73,614.05
	54. Office Supplies			$3,459.91	GHC 10,039.16
	55 Media Publication and Education			$0.00	GHC 0.00
	59. Component Total:			$61,812.57	GHC 197,151.89
60.	Miscellaneous				
	61. Sundry			$29,988.67	GHC 88,262.99
	62. Audit Costs			$3,600.00	GHC 10,994.00
	63. Steering Committee			$6,751.11	GHC 14,189.99
	64 Incentives to Local Communities			$49,360.08	GHC 139,266.46
	69. Component Total:			$89,699.86	GHC 252,713.44

70.	National Management Costs				
	71. Executing Agency Management Costs				
	72. Focal Point Monitoring				
	79. Component Total:			$0.00	GHC 0.00
	Total Expenditures To-date (B):			**$412,610.63**	**GHC 1,127,819.87**
100.	**Remaining Balance of Funds (A - B):**			**$7,389.37**	**(GHC 53,351.87)**

(3) Submit bank reconciliation statement along with the bank statements to support the remaining balances/funds in the Cash Flow Statement.

Annex 3: List of registered farmers in the project communities

LIST OF REGISTERED FARMERS

Community : **Olantan-Begoro, Eastern Region**

NO	NAME OF FARMERS
1	Augustina Narh
2	Rebecca Tetteh
3	Yohanes Tettey
4	Emmanuel Tetteh
5	Elizabeth Dede
6	Herbert Annor Narh
7	Michael Gbettey
8	Kpabetey Teye
9	Gladys Maky
10	Philip Tettey
11	Hayford Emmanuel Tettey
12	George Sackey
13	Akunyumu Tetteh
14	Rosina Tetteh
15	Yaw Adjei
16	Francis Naatey
17	Jacob Narh
18	Sandra Tettey
19	Abraham Tettey
20	Michael Tettey

Community : **Nsugunsua-Offinso, Ashanti**

NO	NAME OF FARMERS
1	Kofi Daare
2	Anthony Munyere

Community : **Ahinkwa-Begoro, Eastern Region**

NO	NAME OF FARMERS
1	Ellis Emmanuel Tetteh
2	Joseph Kwabla
3	Emmanuel Kwadjo Oboadey
4	John Kwabla Opey
5	Comfort Djoko
6	Tetteh Edward Agyapong
7	Beatrice Mautsueni
8	Anthony Akpatse
9	Agnes Madjah
10	Esther Odonkor
11	Grace Addae
12	Emmanuel Detsen
13	Victoria Nuetey
14	Edmond Bachana
15	Edward Kwaku Padi
16	Samule Martey Akwetey
17	Angelina Kwao
18	Andrew Obotey
19	Robert Kwame Frimpong
20	Awatey Kani
21	Comfort Afilawa
22	Beatrice Opey
23	Adams Taye
24	Joseph Yaw Amanor
25	Mangor Batsah
26	Vida Laweh

Community : **Twumkrom-Dormaa, Brong Ahafo Region**

NO	NAME OF FARMERS
1	Kyeremaa Adwoa
2	Kumi Paul
3	Yaw Kyeremeh
4	Konama Comfort
5	Addo George
6	Kumi Benjamin
7	Kyeremaa Lydia
8	Yeboah Moses
9	Siaw Joseph Afriyie
10	Twum Isaac
11	Biafra Mary Nsiah
12	Amponsah Rita
13	Frimpomaa Adwoa
14	Yeboaa Akosua Sabina
15	Kumi Portia
16	Konama Felicia
17	Broni Afia
18	Asiraa Mary
19	Pomaa Doris
20	Pomaa Theresa
21	Betus Martin
22	Adobea Joyce
23	Yeboah Florence
24	Yeboah Adwoa
25	Addo Margaret
26	Twumwaa Margaret

3	Kofi Somali
4	Daare Sempoa
5	James Yewfor
6	Gbekaa Batiere
7	Sompou Soolegena
8	Akwasi Daseile
9	Ayiriba Dagarti
10	Naayoah Darri
11	Abena Dapor
12	Gupinwo Ganah
13	Afia Daghati
14	Tam Domopiele
15	Kwaku Gyamfi
16	Enee Dare
17	Kwadwo Baawere
18	Akwasi Danyuer
19	Baayaa Sonaa
20	Yaw Batie
21	Soolo Kakraba
22	Anthony Kpitri

Community : **Ntabene-Dormaa, Brong Ahafo Region**

NO	NAME OF FARMERS
1	J.K. Kumi
2	Ama Kate
3	Kyeremaa Sara
4	Ansu Paul
5	Buraima Seini
6	Nyame Kwadwo
27	Beatrice Huyor
28	Joseph Tei Bawa
29	Yohanne Osom
30	Cecilia Tettey Wayo
31	Tei Samuel Okoampa

Community : **Abonsrakrom-Dormaa, Brong Ahafo Region**

NO	NAME OF FARMERS
1	Mintah Martin Kofi
2	Dei Kofi
3	Asare Stephen
4	Ameyaa Ama
5	Amponsah Isaac
6	Kumi Yaa
7	Benewaa Ama
8	Yeboah Agnes Yaa
9	Yeboah Comfort Abena
10	Addae Regina
11	Fimah Mary
12	Kisiwaa Doris
13	Tweneboah Elizabeth
14	Yeboaa Cecilia
15	Kumi Adwoa Agnes
16	Kroma Margaret
17	Attaa Adwoa
18	Ameyaa Lucy
19	Appiah Comfort
20	Owusu Kwame
21	Yeboah Anthony
27	Serwaa Comfort Akosua
28	Benewaa Margaret
29	Addai John
30	Frimpong Kwadwo Edward
31	Asamoah Emmanuel
32	Twum Bismark
33	Foriwaa Charlotte
34	Yeboah Margaret
35	Yeboah Kwaku
36	Hinneh Joe Kwasi Justice
37	Asantewaa Janet
38	Twumwaa Akua Grace
39	Kumi Gladys
40	Gyamfuaa Regina
41	Gyamfuaah Patricia
42	Yeboah Beatrice
43	Asantewaa Augustina

7 Serwaa Felicia
8 Semeneka Akua
9 Forkuo Akua
10 Febri Akua
11 Asiraa Mary
12 Addai Janet
13 Nyame Francis Kwame
14 Pomaa Mary Yaa
15 Aboagye Kofi
16 Nyame Peter
17 Osumani Mohammed
18 Kofi Stephen
19 Koosono Yaw
20 Osei Mary
21 Adwoa Mercy
22 Effa Mary
23 Afia Hannah
24 Addai Maxwell
25 Nyame Eric
26 Dufie Lydia
27 Siebekpiir Michael
28 Mensah Samuel
29 Tua Williams
30 Kumi Mary
31 Kyeremaa Janet
32 Gyabea Afia
33 Fordwo James Kojo
34 Somuah Abena
35 Mensah Stephen Yaw
36 Twumwaa Afia Esther
37 Quansah Alfred
22 Ameyaa Agartha
23 Gyau Thomas
24 Kyeremaa Augustina
25 Kumi Alice
26 Oppong Charles
27 Frimpomaa Georgina
28 Addai Janet
29 Ameyaa Faustina
30 Yeboaa Selormey
31 Akosua Mansa
32 Asare Kwasi
33 Asantewaa Juliana
34 Addai Sussana
35 Yeboah Agartha
36 Mensah Mary
37 Gordon Kwaku
38 Yeboah John
39 Kyeremeh Yaw
40 Yeboah Stephen
41 Siaw Kwaku
42 Yeboaa Comfort
43 Yeboaa Akosua
44 Agyeiwaa Faustina

38	Dele Innocansia
39	Kyereaa Agnes
40	Nsoyode Oscar
41	Yeboah Richard
42	Boatemaa Patricia
43	Kyeremaa Paulina
44	Kumi Felix
45	S.D. A Church, Ntabene

Annex 4: Benefit share agreement between farmers on project and Forestry Commission of Ghana {Contracts Act 1960 (Act 25); Forest Plantation Development (amendment) Act, 2002 (Act 263); and Timber Resources Management (Amendment) Act, 2002(Act 617)}

MINISTRY OF LANDS, FORESTRY AND MINES

(FORESTRY COMMISSION)

1. **PARTIES TO THE AGREEMENT**

This Agreement is made this.. ……day of ……. , 20……..

BETWEEN the ……./Forestry Commission (hereinafter called the "investor") which expression shall where the context so admits or requires include its successors and assigns acting by the Chief Executive its true and lawful attorney of the first part

And

……on behalf of the

……..Taungya Group (hereinafter called the "Farmer") which expression shall where the context so admits or requires include its successors in title and assigns of the second part

And

…….....on behalf of the Traditional Authority, Stool land owner and Local Community (hereinafter called to as the "Landowner") and where the context so admits or requires shall include it's assigns and successors in title of the third part

For the development of a……Ha of a Modified Taungya Plantation within compartment(s) …….. of ……. forest reserve in the

……. District of the

……Region of the Republic of Ghana and more specifically described in Schedule A hereto.

Whereas

(a) **The Investor** is responsible for the provision of financial management and technical inputs of the Modified Taungya Plantation Investment.

(b) The **Farmer** is responsible for the provision of labour and maintenance of the Modified Taungya Plantation Investment.

(c) The **Landowner** is responsible for the guaranteeing of access to the land and security of tenure for all parties concerned.

NOW THEREFORE it is hereby agreed as follows:

2. **INTERPRETATION**

In this Agreement and in the schedule otherwise provided.

Farmer	- means a farmer Group which has agreed to participate in The Modified Taungya Plantation Development Programme according to the terms of this Agreement.
Force Majeure	- means any circumstance beyond the reasonable control of any party including but not limited to wildfire, flood, act of God, strike, lock out or industrial action which is not limited only to the party's work force.
Forest Commission	- means the Government appointed agency responsible for the management of the nations' forests
Forest Reserve	- means land constituted or proposed to be constituted under section 17 of Forestry Ordinance Cap 157 of 1927

Investor	- means an individual, public, private or statutory entity that uses, invests and participates in the Plantation Development within degraded forest reserves.
Landowner	- means the Traditional Authorities (Stool, Skins, families, alienation holders, local communities) to which royalties from the forest reserves in question accrues.
1	Local Community - means communities and settlements fringing the forest reserves in question
Minister means	- Minister for Lands, Forestry and Mines or his Representative.
Modified Taungya	- means a system of planting trees interspersed with crops. The crops are harvested by farmers till such a time that the canopy closure of the growing trees makes it impossible to continue crop cultivation. After canopy closure the farmers continue to tend the trees to maturity.
Modified Taungya	
Plantation Area	- means area(s) granted to the participating parties planted or to be planted with trees of one or more species and demarcated by the Forestry Commission.
Plantation Area	- means an area planted with trees of one or more species usually but not exclusively for wood production.

Plantation	- means a forest or stand established by planting and/or seeding in the process of afforestation and reforestation. They are either of exotic or indigenous species.
Schedule means	- A schedule to this Agreement.
Taungya Group	- means a farmer Group who have agreed to participate in the Modified Taungya Plantation Development Programme.

3. RESPONSIBILITIES OF THE INVESTOR

3.1 The Investor agrees to invest and participates in Modified Taungya Plantation Development in the presented allocated area subject to and in accordance with the terms and conditions of this agreement.

3.2 The Investor shall be responsible for supplying the Modified Taungya Farmer Group with good quality seedlings

3.3 The Investor shall be responsible for providing the requisite training and extension services

3.4 The Investor shall be responsible for marketing and accounting of the plantation products.

3.5 The Investor shall be responsible for the management, oversight and day to day supervision of activities within the plantation

3.6 The Investor shall provide the financial resources and requisite equipment to carry out its obligations

RESPONSIBILITIES OF THE FARMER

The Farmer shall provide labour for all Taungya Plantation establishments and development activities, including site clearing, pegging, planting, weeding and pruning over the entire tree rotation period

The Farmer shall provide labour in the implementation of the wildfire protection strategies with respect to Taungya Plantation.

Where the Farmer needs to recruit additional hand to assist in implementation of the plantation development, the farmer shall recruit such from the Local Community that is a party to this Agreement. The Farmer shall bear the cost of all such recruitment.

The Farmer shall be entitled to grow agricultural crops in the Modified Taungya Plantation area under the direction and supervision of the Investor until tree canopy closure and shall be exclusively entitled to the full proceeds realized from the agricultural products.

Agricultural cropping shall cease not later than four (4) years after establishment of the Modified Taungya Plantation unless by mutual consent.

5 **RESPONSIBILITIES OF THE LANDOWNERS**

The Landowner shall provide land within the degraded forest reserve for the modified taungya plantation development

5.2 The Landowner shall guarantee uninterrupted access to the allocated land for the investor and other parties.

6. RESPONSIBILITIES OF THE LOCAL COMMUNITY

The Local Community shall assist the investor with labour for wildfire prevention and control.

6.1 The Community shall prevent their members from setting fires which would adversely affect the Modified Taungya Plantation and Forest reserve as a whole

6.2 The local community shall assist the investor to prevent from illegal activities within the Modified Taungya plantation

7. BENEFIT SHARING

7.1 The Investor/Forestry Commission shall receive 40% of all proceeds obtained from the tree plantation, excluding agricultural crop proceeds unless by mutual agreement with the Farmer

7.2 The particulars of the farmer (photographs, record cards) shall be attached to this Agreement as Schedule B. The Farmer shall receive 40% of all proceeds obtained from the tree plantation and all the agricultural crop proceeds except otherwise agreed.

7.3 The landowner shall receive 15% of all proceeds obtained from the tree plantation excluding agricultural crop proceeds. For the avoidance of doubt the stool landowner shall be entitled to 55% of the proceeds accruing to the landowner with the remainder accruing to the Traditional Authority.

7.4 The Local Community shall receive 5% of all proceeds obtained from the tree plantation excluding agricultural crop proceeds.

7.5 Details of the benefit flow over the production cycle is as specified in Schedule C

8. <u>SUSPENSION AND TERMINATION</u>

8.1 The Minister or his representative acting on the advice of the Forestry Commission may suspend or terminate this Agreement with any of the parties individually or jointly, as the situation may require when any of the provision of this Agreement are breached by a written notice to the said party.

8.2 The notice shall be written and the intention to suspend or terminate stated in the notice. The party will then be given 30 days to remedy the breach of the Agreement.

8.3 The right to terminate this Agreement shall be without prejudice to any other right or remedy in respect of the breach concerned or any other breach

9. BREACH OF AGREEMENT

9.1Any party to this Agreement may apply to the Commission to seek its intervention when a breach occurs

9.2A breach occurs when the parties fail to perform their obligations as specified under this Agreement

10. PENALTIES

10.1 Upon termination of this agreement with the offending party, the said party shall lose title to any future benefits from the date of termination of this Agreement and the remaining parties shall have the opportunity to take the offending party's responsibilities and benefits.

10.2 In the event that none of the remaining parties are interested in the opportunity granted, the Commission shall take up the responsibilities and benefits

11. TRANSFER AND ASSIGNMENT

11.1 In the event of a re-organization of the parties to the agreement that results in the said party's business and activities being implemented, performed, carried out under a new body, the rights and responsibilities of the party shall immediately transfer to the new entity

11.2 Transfer of rights of any of the parties shall be valid only upon prior notification and agreement of the other parties.

11.3 In the event of the death of any of the participating parties, their rights immediately transfer to their next of kin or designated successors.

12. FORCE MAJEURE

12.1 If any of the said parties are unable to perform all or any of the obligations of this Agreement by reason of Force Majeure, the Investor affected shall within 3 months give notice and reason to the others of the party's inability to perform under this Agreement due to Force Majeure.

12.2 Following such notice the Minister/Commission shall decide whether to suspend or terminate the Agreement

13. DISPUTE RESOLUTION

13.1 Any dispute arising out of or in connection with this Agreement which cannot be settled amicably among the parties shall be settled definitely and conclusively in accordance with the provisions of the Arbitration Act 1961 (Act 38) by a panel of 4 arbitrators. Each party shall appoint one arbitrator and the Minister shall appoint the fourth arbitrator who shall be the umpire.

13.2 The language and venue for arbitration shall be as agreed by all the parties

13.3 The decision of the arbitrators shall be final.

14.0 INSURANCE

The investor shall throughout the term of this Agreement, at the investor's own expense, insure his equipment, trees, operations, staff and third parties with an insurance company approved by the Insurance Commission against all losses, damages, costs, charges, liabilities and expenses arising out of the investor's works, operations or processes pursuant to this Agreement. Whenever required the investor shall produce the policy or policies of such insurance and the receipts for the current year's premium.

IN WITNESS WHEREOF the parties hereto sign and append their mark the above written Agreement.

SCHEDULES (see attached)

Signed by the Investor in the presence of

Name ……..

Signature……

[redacted]**Witness**

Signed by the Landowner in the presence of

Name ……..

Signature……

Witness

……

[redacted]**Chief Executive**

……..

Landowner

Thumprinted by the Landowner after the contents had been read, interpreted and explained to him/her by …….. in the …… language and he/she appeared perfectly to have understood same in the presence of

Name ……..

Signature……

His/Her

X

Mark

----------(Name:)