
Scope of Work

The Sustainability of Forest Production and Yields in Ghana

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**Prepared for USAID/Ghana: Trade and Investment Program
June, 1992**

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1.0. BACKGROUND

A review of relevant literature indicates that deforestation poses a significant threat to the tropical moist forest resource in Ghana. Forestlands, which are estimated to have covered 88,000 km² at the beginning of the nineteenth century (one-third of total land area), now total about 16,000 km² (about 7% of total land area). Perhaps more significant is a recent estimate that indicates an annual rate of deforestation in Ghana of 22,000 hectares/year. In addition, it has been reported that there are virtually no primary forest areas remaining in Ghana.

While some deforestation can be attributed to logging activities, most deforestation has traditionally been the result of a deliberate policy by the government to encourage and subsidize the establishment of permanent plantations of tree crops such as cocoa and oil palm in forest areas. Cocoa production in particular was responsible for the majority of rainforest conversion up until the early 1970's.

While logging activities are not directly responsible for a substantial amount of deforestation in Ghana, they have contributed indirectly by providing access to previously inaccessible areas of forest. This phenomenon became particularly destructive during the period of drastic economic decline experienced by Ghana (1975-1985) that significantly increased the level of impoverishment experienced by rural households.

The forces that contribute to deforestation vary from country to country based on the interaction of the social, political and economic forces existing within the country. In Ghana the predominant causes of rainforest destruction appear to be: conversion to permanent tree crops, population pressure in rural areas, rural poverty, shifting agriculture, land tenure issues, fuelwood gathering, logging activity and inadequate or poorly enforced forest regulations. Complicating this issue is the fact that each of these factors may only impact a particular region of the forest zone. For example, population pressure and fuelwood gathering are much more of a problem in the northern dry semi-deciduous forest zone than in the moist evergreen forest zone in the southwest.

Deforestation poses a significant threat to the health of the forest products industry as well as the domestic economy of Ghana. The forest products industry generated over US\$110 million in exports revenues in 1991 while providing an estimated 250,000 jobs.

The timber industry is the third largest earner of foreign exchange for the country, exceeded by only cocoa (US\$320 million) and gold (US\$300.7 million).

The importance of the forest resource to the Ghanaian people and the domestic economy requires that the rainforests of Ghana be managed on a sustainable basis. The concept of sustainability implies an equilibrium between growth in the forest and removals from the forest. Thus, in order to develop and implement a sustainable forest management policy, it is not only necessary that growth within the forest be estimated but it is equally as important to quantify the requirements of the various groups that rely on the forest resource as a source of raw materials. In this way the demand for forest resources can be balanced against the sustainable supply available.

2.0. STATEMENT OF WORK

In order to study the issue of sustainability in the forests of Ghana, it is essential to focus on both sides of the sustainability issue, supply and demand, in order to ensure that a balance is reached. The first part of the study should focus on the sustainable yield that can be obtained from the Ghanaian forests while the second part would concentrate on the requirements that are made on the forest resources by various groups such as the timber industry, agriculturalists and rural households.

2.1. Part I.

This part of the study will concentrate on working with the results of the forest inventory and the permanent sample plots established in the forest reserves to determine the sustainable harvest level for the forest as a whole as well as for individual species. Among the issues that will be addressed in this part of the study are:

- Determine the status of primary rainforest in Ghana. If any stands do exist these should be identified by forest reserve, location within the reserve and total area.
- Determine the area of open (unreserved) forest remaining in Ghana and identify its locations.
- Quantify the rate of regeneration within the forest in general, and also with reference to individual species in particular.
- Indicate how current forest harvesting techniques impact the forest resource with respect to soil fertility, felling damage to remaining trees, genetic diversity of the forest as well as bio-diversity within the forest.

- Determine the annual allowable cut obtainable from the forest on a sustainable basis. Particular reference should be directed to determining the annual allowable cut for individual species, particularly the traditional export species.
- Make recommendations regarding harvesting techniques to minimize felling damage to remaining trees during harvest operations. These recommendations should take into account the economic and technical constraints of working within the Ghanaian forest and should be appropriate for Ghana.

2.2. Part II.

The second part of the study will assess the demands that are placed upon the forest resource by various end-users. The actions of these groups directly impact the forest resource, and many of these groups rely upon the forest as a source of raw material. This part of the study will quantify the demands made upon the forest resource and make recommendations regarding how best to achieve sustainable management within the forest reserves. In order to achieve these objectives, the following steps need to be undertaken:

- Quantify the annual fuelwood and charcoal usage within Ghana and identify the primary forest areas that are impacted by fuelwood gathering and charcoal production activities.
- Determine the total processing capacity of the various segments of the forest products industry. These segments include the production of: logs, sawntimber, veneer, plywood, furniture, flooring and mouldings.
- Quantify the annual raw material requirements of the timber industry based on current capacity utilization ratios.
- Identify the current and future requirements of the various segments within the agricultural sector and their likely impacts on the forest resource in Ghana. Particular emphasis should be directed towards the tree crop segment, including cocoa, oil palm, rubber trees, cashews and citrus fruits.
- Determine the current status of reforestation and afforestation efforts within Ghana. Quantify the total area reforested with particular emphasis on the species used and the success rate of these efforts.

3.0. STAFFING REQUIREMENTS

The sustainability study can be performed in two ways depending upon the country mission's concern with the constraints of time and cost. Option A would require the services of two consultants over a period of four weeks and would cost approximately US\$35,000. Option B would require the services of one consultant for a period of 5 weeks and would cost approximately US\$20,000. The specifics for each of these options are discussed in detail below.

3.1. Option A

Part I.

Part I of the study would require the services of a forest silviculturalist with experience in timber harvest operations. Since much of the data required for Part I has already been collected by the Ghanaian Forestry Department, the consultant would be required to work cooperatively with a forester from the Forestry Department who is involved in the forest inventory project. Most likely this will involve working in Kumasi where the forest inventory project is being coordinated and administered.

The principal researcher involved in Part I should have an advanced degree in forest silviculture with knowledge of forest harvesting techniques. Knowledge of tropical forest ecosystems, forest management techniques and forest inventory methods in West Africa are essential. Experience in tropical forestry in Africa is highly desirable. Part I would require approximately four weeks to complete and would require the researcher to spend time in both Kumasi and Accra.

Part II.

Part two of the study would require the services of a forest products marketer with some background in natural resource economics. Much of the data required for this part of the study can be obtained in-country and would require that the consultant spend time in Takoradi, Kumasi and Accra.

The principal researcher involved in Part II should have an advanced degree in forest products marketing with a strong background in industry analysis techniques. Knowledge of tropical forestry, forest management techniques and forest inventory methods is also desirable as is experience working in the forestry and forest products sectors in West Africa.

Both consultants should have the ability to write reports in a clear and concise manner and be capable of working independently. During the first three weeks of the project, each consultant would work independently gathering and analyzing the data for both parts of the project. During the final week of the project the consultants would meet in Accra and work cooperatively in preparing

the final report and generating recommendations regarding the sustainability of the forest resource in Ghana.

3.2. Option B

Option B would require the services of a single consultant with an advanced degree in forest products marketing and a strong background in tropical forestry. The consultant should have extensive experience working in the forestry sector in West Africa and should be familiar with both the forestry sector and forest products industry in Ghana. The consultant should also be familiar with the current forest inventory project being performed by the Forestry Department as well as natural resource issues in Ghana that impact the forest resource.

The consultant would be required to work in Kumasi, Takoradi and Accra and should be familiar with the Ghanaian agencies and ministries that monitor and regulate the forestry and forest products sectors. In addition, the consultant should be capable of working independently with a minimal degree of supervision. Finally, the consultant should have the ability to write reports in a clear and concise manner and be capable of meeting deadlines.

4.0. ESTIMATED COST OF THE PROJECT

4.1. Option A: (2 consultants over 4 weeks)

Travel: US-Accra-US: (US\$4,000 x 2)	US\$8,000
Travel: in-country: (US\$750 x 2)	1,500
Per-diem allowance: (US\$150/day x 30 days x 2)	9,000
Consultants fees: (US\$250/day x 30 days x 2)	15,000
Project related expenses: (US\$750 x 2) (ie: copying, fax, etc.)	1,500

Total estimated cost	US\$35,000

4.2. Option B: (1 consultant over 5 weeks)

Travel: US-Accra-US:	US\$4,000
Travel: in-country:	1,000
Per-diem allowance: (US\$150/day x 35 days)	5,250
Consultants fee: (US\$250/day x 35 days)	8,750
Project related expenses: (ie: copying, fax, etc.)	1,000

Total estimated cost	US\$20,000