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PRIVATIZATION STUDY FOR THE NYAMBAI SAWMILL

REPUBLIC OF GAMBIA

REPORT BY

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1750 New York Avenue, N.W.
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Center Project No. 31 December 4, 1986

Prepared for the
BUREAU FOR PRIVATE ENTERPRISE
U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

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EXECUTIVE SUMMARY

1. The Nyambai sawmill owned and operated by the Government of The Gambia currently causes an annual budget drain of 179,000 Dalasis (25,200 U.S. dollars). It operates at 10 percent of its capacity and the rough green lumber it produces is marketed at low prices controlled by the Government.

2. There exists an opportunity to turn this loss situation into a source of revenue (stumpage fees, income taxes) for the Government estimated at 400,000 Dalasis (56,3000 U.S. dollars) per annum provided the sawmill is privatized. Capacity utilization will be increased to a more normal rate of 60 percent through the use of non-subsidized fuel and/or electric power. The output will consist of dry lumber, the price of which will not be controlled, and will compare favorably with that of imported white lumber.

3. The asking price for the assets of the sawmill would be around 2,000,000 Dalasis (282,000 U.S. dollars). In addition, the investor would have to commit 240,000 Dalasis (33,800 U.S. dollars) in equipment and repairs as well as 464,000 Dalasis (65,400 U.S. dollars) for log and lumber inventory build up. Since the rate of inflation in The Gambia exceeds 30 percent, it is unlikely that potential investors will purchase the sawmill for cash. Instead, a sales agreement based on a 6 year final maturity and the current 12 percent preferential rate for new projects in The Gambia as assumed in the report and/or a variation of this scenario would result in a projected back of 3.6 years and a 37 percent internal rate of return or better.

4. The climate for privatizing the sawmill is favorable. The Government of The Gambia is committed to the divestment of unprofitable state owned enterprises. The consultants located several interested parties. It is recommended that the privatization be concluded by July 1, 1987. Special attention should be paid to the protection of forestry resources through a dedicated fund financed by stumpage fees and the selection of private investors on an arm's length basis.

5. Further USAID technical assistance would help catalyze the involvement of Gambian officials in the privatization process, accelerate the sawmill divestment and insure that the buyers will be selected on the basis of objective criteria. The level of effort has been estimated at 70 person days and the total cost has been projected at U.S. $70,000.

DATA SHEET

1. Name of State Owned Enterprise: Nyambai Sawmill, Department of Forestry, Republic of The Gambia.

2. Location: 30 km from downtown Banjul, 2 km past Yundum International Airport on the Birkama Highway.

3. Start of Operations: Early Sixties prior to independence.

4. Production Facilities:

One Bolter Saw*	Two Unimog Trucks (one not Operational)
One Planer*	One Log Trailer
Two Edgers*	One 72" dia. circular saw for large bolts (not operational)
One Blower*	One Gantry Crane
One Diesel Electric Cummins Generator*	Two Concrete Buildings
One Fire Extinguisher*	Two sheds - drying area
Miscellaneous Spares*	

* Equipment of U.S. origin donated by USAID to The Gambian Government. Installation completed in January, 1985.

5. Employees: Total of 24 employees, including management.

6. Sources of Raw Materials: Four nearby (2 to 3 kms from sawmill) Gmelina plantations totalling 1,239 hectares.

7. Products: Uncured white (Gmelina) lumber in 55 different width/thickness/length combinations sold at Government controlled prices averaging 760 Dalasis per cubic meter (M3).

8. Competitors and Market Share: All lumber sold in The Gambia is dry, either imported and/or produced at the Kafuta German sponsored sawmill. Sales of Nyambai sawmill correspond to 4 percent of total lumber market.

9. Financial Highlights:

	Units	Dalasis*	Dollars
Sales	105 M3	85,1000	12,610
Operating Loss**	------	82,400	11,600

* U.S. Dollar: 7.10 Dalasis as of September, 1986.
** As reported in sawmill records for FY 1985-86, excluding depreciation, log royalty fees and fixed costs.

Operating loss caused by capacity underutilization, high labor costs, low sales prices and insufficient unit sales.

SCOPE OF WORK

According to the Task Assignment Number, 86-GAM-2-IPC, issued by the Center For Privatization, the consultants' objectives were defined as follows:

"1. Marketing and sales assistance;

2. Operations review (technical, operating costs, required investment;

3. Prepare a 10-year cash flow;

4. Review all privatization alternatives and recommendations of courses of action; and

5. Outline of promotion and related activities leading to privatization."

Study Team Members

- Don Baack (Senior Consultant, Forestry), Don Baack and Associates
- Jean G. Crouzet (Senior Consultant, Finance and Marketing), International Phoenix Corporation

INTRODUCTION

1. The Republic of The Gambia has an opportunity of turning an operation which is causing a total loss to the Government of 179,000 Dalasis per year into a cash source of upward of 377,000 Dalasis per year. The key to this radical change is to privatize the Nyambai sawmill and to charge a royalty for the gmelina logs harvested. The Nyambai sawmill currently is losing 82,400 Dalasis per year, even without charging for logs, depreciation and fixed costs. In private hands it is estimated the sawmill would generate a profit of 745,600 Dalasis after paying a royalty for logs, fixed costs and depreciation.

2. An adequate supply of gmelina growing stock and inventory exists to assure the sawmill can run at the expected level or even twice that level without running out of timber--provided the Forestry Department continues to invest in reforestation, forest protection, thinning and other silvicultural practices.

3. A market exists for the gmelina lumber in The Gambia. The asking price for the rough dry lumber will be 1900 Dalasis per cubic meter, up from the current price of 760 Dalasis charged by the sawmill for the inferior rough green product now being produced. Contrary to current rough green gmelina prices which are now controlled by the Government, the price for dry gmelina will be determined by market forces. At 1,900 Dalasis per M3, dry gmelina lumber will be competitive with imports of dry lumber selling at upward of 2,000 Dalasis per M3. Gmelina must be dried before it is marketed as it is very prone to twisting and cupping if it is not dry.

4. The financial analysis shows the Nyambai sawmill to be worth at least 2,000,000 Dalasis. Several qualified buyers have been identified, and it is expected more will surface when the Government announces the privatization of the sawmill. It is recommended that the assets of the Nyambai sawmill be sold for 2,000,000 Dalasis in cash or payable over a period of years. For the purpose of this report, it is assumed that the assets will be paid for in six equal installments of 434,000 Dalasis with the first installment payable up front and a 12 percent interest on the unpaid balance. The unpaid balance will earn 12 percent interest. Under these conditions, the payback for the purchase price of 2,000,000 Dalasis and an additional investment of

694,000 Dalasis, including 454,000 Dalasis in working capital, would be 3.6 years. The 2,000,000 Dalasis asking price for the assets of the Nyambai sawmill is based upon the assumption that the Government of The Gambia would grant an income tax holiday for five years. If this is not possible, the asking price should be reduced.

5. The privatization of the sawmill should be accompanied by the adoption of strict rules of the game for the orderly exploitation and maintenance of the plantations surrounding the Nyambai sawmill. It is essential that the Department of Forestry and the owner of the sawmill formally agree on an annual logging plan so that the needed log supply will be assured. The royalties collected from the sale of gmelina logs to the sawmill will be used exclusively for the funding of the reforestation. Naturally, the determination of the stumpage royalties would have to be based on a reliable accounting system for the recording of logs and squares input and the output of lumber and firewood.

6. Although the privatization of the sawmill would not require any protection against import of sawn lumber, the Government of The Gambia should take steps to assure that the duties are being levied correctly on imported lumber (sawn and squares) coming into the country by ship and truck. The Government of The Gambia is losing sizeable customs and excise revenue at present. It is suggested that The Government brand all imported lumber and squares to increase the collection of customs and excise duties if such an objective is deemed by the Government to be a top priority matter.

7. The climate for the privatization of the sawmill is highly favorable. Within the context of its economic recovery program, the Government is contemplating the privatization of several other entities such as Seagull, CFAO and the Nyambai sawmill. Furthermore, the Government of The Gambia has already dismissed several thousand employees and the new owner of the sawmill should not have any problem with respect to the dismissal of existing sawmill workers and/or the selection of those he wishes to retain.

8. The Nyambai sawmill could well be the first Government enterprise to be sold to the private sector. The privatization of the sawmill should be implemented prior to July 1, 1987. Therefore, it is important that this privatization be implemented successfully and that appropriate steps be taken in order to avoid some of the problems reported in connection with the prior privatization

of the garbage collection service within the Banjul area. Because the interest in the Nyambai sawmill is high, criteria for the evaluation of the bidders on an arm's length basis should be defined and adhered to. Moreover, the establishment of a dedicated fund for the maintenance of the surrounding plantation is vital to the success of sawmill operations. The commitment of the Government of The Gambia to these two measures should be considered as necessary conditions of any USAID technical assistance.

9. The activities required to achieve the privatization of the Nyambai sawmill include the preparation of a technical and financial prospectus and the establishment of objective buyer selection criteria. After the bids have been received, they should be carefully reviewed by the selection committee consisting of NIB, MOF and representatives of other government agencies who would formulate a recommendation to the interministerial committee to be forwarded to the President's office. The consultants retained by USAID would be invited to participate in the selection process on an advisory basis. If requested, the consultant would also assist in the negotiation of the sales agreement. The total cost of this technical assistance program would be less than US$70,000.

10. Not only will this effort involve outside consultants but it is primarily intended to engage the active participation of local government officials in the privatization of the sawmill. In view of the sizeable potential benefits the privatization would generate for the Government of The Gambia. The USAID Mission direction in Banjul, may deem appropriate to request the Gambian Government to participate in funding part of the technical assistance associated with the divestment of the sawmill. Such a participation could be a cooperative costsharing arrangement, such as the assumption of local expenses incurred by outside consultants and/or any other formula.

Section 1. Current Lumber Market and Sawmill Operations

1.1 The Sawn Timber or Lumber Market in The Gambia

To determine the total lumber market in The Gambia, the consultants attempted to use the import statistics compiled by the Department of Trade. However, import statistics for the first eleven months of Fiscal Year 1986 contained major inconsistencies and could not be used.

The following estimated supply and demand reports are our best effort, based on interviews with importers, construction companies, sawmill operators and furniture makers in the Banjul area. No attempt was made to quantify the lumber demand in the area outside Banjul if it does not use Banjul itself as its source.

Annual Sawn Timber Supply 1986 in Lumber Cubic Meters, LMM3

Item	Country of Origin	Source	LMM3/Year
Imports			
Logs	Guinea-Bissau	Secken	250
Lumber	Guinea-Bissau Liberia W. Africa	Appollo	1,200
Lumber	Senegal	Sowe	300
Subtotal Imports			1,750
Local Supply			
Lumber	Gambian-German Sawmill	Actual	480
Lumber	Nyambai Sawmill	Actual	105
Lumber (Rhun Palm)	Other Sources	Estimate	205
Subtotal Local Supply			790
Grand Total Supply			2,540

The total demand was estimated as follows:

Annual Sawn Timber Demand

General Use	LMM3/Year
Construction	900
Stringers, planks and boards used for supports, concrete forms. There are several major construction companies including the Chinese State Construction Company, Kier Company, etc.	
Furniture and House components	1,640
Furniture, door and window frames, door covers (the actual door,) window covers. There are an estimated 100 furniture makers in the Banjul area in addition to the Carpentry Shop of the Public Works Department.	
Grand Total Demand	2,540

1.2 Background

The Nyambai plantation actually consists of four plantations, including Bamba, 389 ha, Nyambai, 407 ha, Kabafita, 243 ha, and Furnyar, 405 ha for a total size of 1,239 hectares. All four plantations are located within 3 kilometers of the Nyambai sawmill.

The Nyambai sawmill is located on land owned by the Government of The Gambia near the Banjul airport on the main highway to Brikama.

The sawmill has existed for a number of years, having been built by the British prior to 1970. The original equipment, a 72 inch diameter circular saw is in need of extensive repairs and has not been considered in the evaluation. The circular saw and its associated carriage was designed to saw logs up to 40 inches in diameter.

The current small log mill, a Bolter saw, was built in 1984/1985 under a grant from USAID as part of the Forest Utilization Project.

The equipment is in good condition at the present time, having been operated only a fraction of the time during the

past two years due to a lack of fuel and an apparent lack of motivation on the part of the crew.

The crew size has recently been reduced to 24 from a number ranging above 30. The reduction in crew size has not had an apparent effect on production.

1.3 Logging and Production

The Nyambai sawmill is sawing plantation grown gmelina which is over 20 years old. Gmelina is a deciduous species of "hardwood" but is classed as a "soft" hardwood. Gmelina, a fast growing species originally found in Burma, is classified as a whitewood in the relatively unsophisticated Gambian lumber market. Whitewood is less expensive and in less demand than the alternative "redwood". The Gambian lumber market is discussed in more depth later in this section.

Under current operating rules, the logs are supplied free to the sawmill, therefore the royalty charge is zero.

The gmelina timber is felled by chain saw, bucked into 2 to 2.4 meter long bolts, and then moved to roadside by either a cable from the Unimog truck or by manual labor. The logging is currently done by a part of the sawmill crew during times when the sawmill is not operating. Logging activities are hampered by the lack of chainsaw spare parts. During our visit, only two chainsaws were operating, including one on lcan from the German Forestry project.

The logs are hauled to the sawmill on a truck or on a trailer.

The sawmill operations are limited by a lack of fuel. The utilization project has been allocated 100 liters of fuel per week, serving both the diesel generator system and the vehicles. Assuming 10% of the fuel was used in the vehicles, the remaining 90 liters of fuel will operate the generator a total of 6.8 hours per week, or 354 hours per year, based on the fuel consumption rates we were given. This means the fuel allocation limits the sawmill operations to only 18 percent of the available time.

During the year 1985-1986, the sawmill produced 105.1 cubic meters of sawn lumber, for an average production rate of 0.3 cubic meters of sawn lumber per hour, or 0.66 cubic meters of logs used per hour.

On an annual basis this represents 234 cubic meters of logs used.

The operating costs of the sawmill and logging operations, excluding plantation management and maintenance, and excluding sawmill depreciation for the year 1985/86 was 167,603 Dalasi, or 473 Dalasis per hour actually operated.

The mill and logging operation employs 24 people all of whom are salaried. Recent layoffs reduced the staff by about 6 or 8 persons to bring the current head count to 24. The 24 includes the management personnel, but excludes any Ministry of Forestry personnel.

1.4 Sales Analysis and Nyambai Selling Price

The following shows the detailed market analysis of the Nyambai sawmill orders for the period July, August, September, 1985, by width, thickness and length.

(i) Distribution by Thickness and Width:

Thickness & Width Th x Wd	Item Percent	Cumulative Percent
2 X 4	22.3	22.3
2 X 9	17.5	39.8
2 X 8	15.6	55.4
2 X 7	13.6	69.0
1.5 X 6	6.0	75.0
2 X 6	5.8	80.8
1 X 6	4.9	85.7

(ii) Distribution by Thickness:

Thickness	Item Percent	Cumulative Percent
2 Inch	79.1	79.1
1 Inch	10.5	89.6
1.5 Inch	8.5	98.1
3 Inch	1.8	99.9

(iii) Distribution by Length:

Lengths	Item Percent	Cumulative Percent
2.4 Meters	79.0	79.0
2.0 Meters	8.0	87.0
1.8 Meters	2.8	89.8
2.15 Meters	2.2	92.0
1.5 Meters	1.9	93.9

As can be seen from the above figures, the greater part of the output consists of 2.4 meter sawn lumber in 2 inch thicknesses. The balance consists of odd size lumber. This situation interferes with the workflow and operating efficiency of the sawmill.

The gmelina lumber is being sold rough green at the mill with no marketing effort. The sawmill does not even have a phone with which to take orders. Customers must visit the mill in person to place orders. The current sawmill price set by the Government averages 760 Dalasis per cubic meter, far below the current wholesale market price of at least 2,000 Dalasis per cubic meter for imported rough dry whitewood.

Little lumber is surfaced in The Gambia. Most lumber is used in rough sawn form, or surfaced by hand on the construction site. For further details, refer to Annex 4.

1.5 Summary of Current Annual Operating Loss:

The sawmill is not operated efficiently. In fact, the sawmill and associated plantations are costing the Government of The Gambia large sums each year, as the following summary indicates:

Nyambai Sawmill Operating Loss(1)
Government Department of Forestry Operation 1985/86

	Thousand Dalasis
Total Sales from Sawmill	85.2
Cash Operating Costs	167.6
Operating Loss	-82.4

It should be noted that this operating loss disregards any fixed costs for such things as depreciation, working capital and insurance.

When this operating loss of 82,400 Dalasis is added to the plantation carrying costs, the current custom collections on imported lumber and the income taxes collected from those employed in the operation, the Republic of The Gambia has a negative cash flow of 179,000 Dalasis as follows:

(1) For details of the sawmill economics, see Annex 1. The associated assumptions for the data elements are documented just prior to the model results.

The Republic of The Gambia
Cash Flow of Sawmill, Imports and Plantation Maintenance
Government Operation of the Sawmill 1985/86

		Dalasis	
Sales Revenue:	Sawmill (2)	85,200	
	Other Sales (3)	19,099	
Estimated Taxes on Income From Sawmill Wages (4)		2,287	
Lumber Customs Duties Collected (5)		21,000	
Subtotal Cash Inflow			127,586
Expenses Charges to Sawmill and Plantation Maintenance (6)		306,995	
Subtotal Cash Outflow			306,995
Net Cash Flow to The Republic of The Gambia			-179,265

Clearly, the existing operation is not an efficient one.

Section 2. Sawmill Operations Under Private Ownership

Under private ownership, the Nyambai sawmill will require a number of changes:

2.1 Marketing Highlights:

2.1.1 The two products to be sold from the sawmill under private operation will be rough dry lumber and Gmelina firewood bundled per the government's specifications. It is assumed that the demand for sawn lumber will grow at the same rate as that of the population, namely 3.25 percent per annum. Annual sales of lumber (850 M3) will account for approximately 30 percent of the estimated market.

(2) Per Nyambai sawmill records.
(3) Per Nyambai sawmill records. Items sold include boat masts, fence posts, fencing, bee hives, honey, and bamboo.
(4) Using the 1986 income tax schedule.
(5) Per actual customs statistical reports.
(6) As reported in the 1986/87 revenue and expenditure report, see Annex 3 for the actual included accounts.

2.1.2 For the purpose of analysis, a sales value of 1,900 Dalasis per cubic meter was used as the sales value.

2.1.3 The existing bolter saw can handle logs up to a maximum of 2.4 meters. The whitewood lumber demand in The Gambia is for some lumber having a length up to four or five meters. This demand could be met if the sawmill operator reconditioned or replaced the large log breakdown system. This reconditioned system would also be suitable for breaking down sawing imported squares of 20 x 20 centimeters. This is a further profit opportunity not included in the analysis.

2.2 Major Assumptions for Logging and Sawmill Operations

2.2.1 The logging will be contracted to independent loggers who will use hand saws and axes to fell the timber, and who will use oxen to skid the logs from the stump to the forest roadside.

2.2.2 The logs will be hauled with a tractor and trailer from the forest roadside to the mill.

2.2.3 An inventory of logs will be developed to operate the mill during the wet season without having to do any logging. This will free the loggers and oxen for use in farming during the wet season and will keep vehicles off the muddy and difficult forest roads during the wet season.

2.2.4 A new entrance into the sawmill from the main highway will be developed to allow logs to be delivered to the mill without moving through the main mill site. Additional log storage area sufficient to store a maximum of 500 cubic meters of logs will have to be developed. This will require a minor expansion of the existing log storage area.

2.2.5 The sawdust blower and sawdust pile will be relocated to keep it from interfering with the movement of logs to the sawmill.

2.2.6 All lumber cut will be "stickered" with spacers to allow air circulation around the boards and stored in the covered lumber storage area to air dry. It is expected the lumber will require two to three months to dry, depending on the season of the year. All lumber will be sold rough dry.

2.2.7 If a customer requires the lumber to be surfaced or planed, the price will be increased by 25%, an amount sufficient to cover the cost of surfacing.

2.2.8 All firewood developed from the gmelina will be bundled as per government regulations and sold for one Dalasi per bundle.

2.2.9 It is expected the new owner will select a new crew to operate the Nyambai sawmill. It is assumed that the government will not oppose such a move. The new owner may very well hire some of the existing crew to capitalize on their knowledge and experience.

2.2.10 The mill will be connected to the national electrical grid per the agreement between the GOC and the Minister of Forestry.

The following subsection highlights the operation of the sawmill under private ownership. For the actual detailed assumptions and further explanation of the logging, sawmill or marketing effort, see Annex 1.

2.3 Log (Stumpage) Royalty Assumptions:

The Republic of The Gambia currently does not charge Nyambai sawmill for the trees it cuts. It does, however, have a schedule of charges for other timber. A royalty of 40 to 50 Dalasis per tree is charged for each tree removed from the forest. The royalty depends upon the species harvested.

It is recommended that the Government of The Gambia establish a royalty rate of 70 Dalasis per cubic meter for gmelina timber harvested from the Nyambai plantations. All logs used by the sawmill will be scaled to determine their cubic meter content. This cubic measurement will be used in the proposed minimum sawmill accounting system.

It may be wise to establish the royalty fee based upon the season logged. In that way, a higher fee could be charged for logging during the wet season to encourage the mill owner to log only during the dry season and thus protect the forest and forest road system from damage during the wet season.

2.4 Projected Logging Costs:

Current logging operations are being done by the sawmill crew during the frequent times when the sawmill is not operating. The trees are being felled in an unsafe manner using chain saws, with the transportation of 2 to 2.4 meter long blocks to forest roadside being done by hand or skidding cable attached to the log hauling truck. As a result of such operations, the forest is only being logged along the forest

roads with few trees being removed more than 10 meters from roadside.

It is proposed that the logging done with the aid of oxen as the skidding traction device, working only during the dry season. In this way it should be easy to contract with farmers who do not work themselves or do not need an ox during the dry season. The farmers would be using the oxen all of the wet season. This schedule will also assure the forest roads are not torn up during the wet season by keeping vehicles off the roads at that time.

2.4 Log Hauling Costs

The logs will be hauled by a tractor and trailer or by contract truck from the forest roadside to the sawmill log storage yard.

The logging and hauling operations will employ six men and two oxen six months of the year and 10 men and four oxen for three months of the year. The delivered log costs are summarized below:

Summary of Projected Unit Log Cost and total Annual Log Costs

Summary of Unit Cost and Annual Cost of Logs	Units	Unit Value	Annual Value
Annual Volume of Logs Used	LGM3		1,835
Total Cost of Logging per LGM3	Dalasi	22.19	40,719
Cost of Log Royalty-Stumpage	Dalasi	70.00	128,450
Total Cost Delivered Logs per LGM3	Dalasis	92.19	169,169

LGM3 = Log Cubic Meters

2.5 Utilization of Production Capacity:

2.5.1 Current sawmill operations are far from the potential of the mill. Hindered by a lack of fuel, the mill currently operates only for an estimated 354 hours per year, with a production rate of 2.38 cubic meters of lumber per day. This production rate is 20 percent of the average production rate achieved in North America during the 1950's. Under private ownership operations, it is expected the average production rate will increase from 2.38 cubic meters of lumber per day to 3.44 cubic meters per day, a 45 percent increase. However, the sawmill will be operating for 1,980 hours. Thus, total annual output will be 850 M3 of sawn lumber. This

increased output from 230 to 850M3 would still only be 30 percent of that regularly achieved in North America. The production rate of 3.44 cubic meters per day could easily be exceeded under good management. However, for the sake of caution, a higher rate is not being forecast at this time.

2.5.2 The possible recovery from the bolter equipment is reported to range from 54 percent to 60 percent. The recovery projections used for the Nyambai sawmill have been reduced to assure a conservative valuation, and a range of 42 to 48 percent cubic is being used, with the average expected to be 45 percent.

2.5.3 The sawmill log usage is based on the lumber cubic recovery of 45 percent, and the lumber production rate of a log usage of 3.44 cubic meters per day results in a log usage rate of 7.64 cubic meters per day. This recovery rate is well below that achieved in North America. This recovery is again an attempt to develop a conservative analysis.

2.5.4 The private manning plan provides for a total of 20 crew and management employees in the sawmill rather than the 24 under government operations. If the six full time equivalent logging and hauling contractors were included in the head count, the totals would be 26 under private ownership, and 24 under government operations. If the production in the sawmill increases above that projected, it may be necessary to add additional crew.

2.6 Projected Operating Costs:

The following is a comparison of the sawmill operating costs per year and operating hour for both government operations and expected private operations:

	Dalasis Per Year		Dalasis/Op Hour	
	Gov't	Private	Gov't	Private
Operating Hours Per Year	354	1,980		
Labor Cost	88,712	98,654	250.60	51.38
Electrical Power Cost	24,393	132,300	63.91	68.91
Vehicle Opn & Maint Cost	7,500	15,360	21.19	8.00
Repairs Cost	25,000	38,400	70.62	20.00
Non Capital Improvements	22,000	28,800	62.14	15.00
Total Annual Optng Cost	167,605	313,514	473.46	163.29

2.6 Fixed Costs

The fixed costs of the operation include such things as the interest on working capital, insurance, and the non-cash charge of depreciation.

2.6.1 A normal log inventory will be maintained at a 40 cubic meters or enough logs to last a week, from October until April, with a build-up of an additional 480 cubic meters of log inventory during the period from April until July, the three months before the beginning of the wet season.

Total Working Capital Summary	Units	Value
Average Dalasis Tied Up In Log Inventory	Dalasi	9,128.79
Value of 13 weeks Lumber Inventory	Dalasi	165,271.60
Value of Spacers for Drying	Dalasi	80,000.00
Additional Spare Parts to Operate the Sawmill	Dalasi	200,000.00
Total Working Capital Inventory	Dalasi	454,400.39
Monthly Average Interest Payment to Maintain this Working Capital.	Dalasi	10,602.68

2.6.2 The estimated cost of fire insurance is 1% of the basically unprotected sawmill and working capital asset replacement value.

2.6.3 Fixed costs have been projected on an annual basis as shown below:

	Dalasi
Cash Costs:	
Insurance	29,539.92
Interest on Working Capital	127,244.16
Subtotal Cash Costs	156,774.18
Non-Cash Costs:	
Depreciation of 2,000,000 D (Purchase price and additional capital investment of 240,000 Dalasis depreciated over a 10 year period)	224,000.00
Total:	380,774.18

2.7 Comparative Profit and Loss Statement of the Nyambai Sawmill Under Government and Private Ownership:

The following illustrates the comparative profit and loss statement of the sawmill under different ownership conditions as well as the magnitude of the turnaround following the privatization of the Nyambai sawmill. Whereas the Department of Forestry did not include depreciation in the sawmill loss, depreciation has been charged to the projected profit even though a five year tax holiday has been assumed. Should the depreciation not be declared and charged until after the tax holiday expires, the purchaser would benefit from reduced future income liability.

	Ownership Operations Year 6 M Dalasis	
	Government	Private
Revenue		
Lumber	80.0	1,568.9
Firewood	5.1	40.2
Total	85.1	1,609.1
Costs		
Log Royalty	0	128.5
Logging	0	40.7
Sawmill Operations	167.8	313.5
Cash Fixed Cost	0	156.7
Total	167.8	638.5
Profit without Depreciation	-82.7	969.6
Depreciation	0	224.0
Net Profit Before Taxes	-82.7	745.6

2.8 Benefits to The Government of The Gambia:

The benefits of the improved operation helps more than just the private operator. The Government of The Gambia also benefits by disengaging itself from a loser, by gaining funding for reforestation and plantation maintenance, by receiving payments from the sale of the sawmill, and finally by collecting additional taxes from the higher paid workers and from the corporation operating the sawmill.

The apparent benefits to The Republic of The Gambia are shown below. This view disregards the potential additional cash flow from enforcing the sawn timber and log custom duties estimated to be 334,000 Dalasis (see Section 3).

The Republic of The Gambia
Cash Flow of Sawmill, Imports and Plantation Maintenance With Private Operation of the Sawmill

	1st 5 Years Dalasi	6 Years + Dalasi
Cash Flow		
Revenue from Sales of Sawmill (1)	433,000	0
Income Taxes on Profit From Sawmill (2)	0	372,800
Estimated Taxes on Income From Sawmill Wages (2)	3,733	3,733
Lumber Customs Duties Collected (3)	12,167	12,167
Royalty for Plantation Upkeep (4)	128,450	128,450
Subtotal Cash Inflow	577,350	517,150
Cash Outflow		
Expenses Charged to Plantation Maintenance (5)	139,391	139,391
Subtotal Cash Outflow	139,391	139,391
Net Cash Flow to The Republic of The Gambia	+437,959	+377,759
Less Prior Cash Flow Situation (6)	-(-179,265)	-(-179,265)
Improved Cash Flow to The Republic of The Gambia	+617,224	+557,024

(1) For details of the sawmill economics, see Financial Analysis section of Annex 2. The associated assumptions for the data elements are documented with the results of the model.
(2) Using the GOB 1986 income tax schedule.
(3) Per actual customs statistical reports, adjusted for the expected reduction in imports due to increased domestic production.
(4) See the discussion on Royalty in the report and in Annex 1.
(5) Based upon cost allocation estimates.
(6) As shown in Section 1.

Section 3. Valuation of the Sawmill Facility:

The capital investment required to purchase the Nyambai facility can be determined in a variety of ways including the net present value of the income stream it will generate, the liquidation value of the equipment were it removed and sold on the used machinery market, and the net book value of the two year old sawmill, allowing two years of depreciation.

3.1 Liquidation Value:

The value of the sawmill equipment, buildings, spare parts and rolling stock, if it were to be removed from the mill and sold as used equipment has been estimated at 700,000 Dalasis.

3.2 Discounted Income Stream:

A traditional method of valuing investments is to view the stream of earnings which they will produce and calculate the net present value of this income stream. The net present value of the after tax cash flow before payments for interest or capital payments is 3m570,000 Dalasi, based on the current cost of capital to the Government of the Gambia at 15 percent. The undiscounted income stream amounts to 7,057,320 Dalasi. The profit generated by the mill will pay back the investment within 3.6 years and the internal rate of return would be 37.15 percent.

3.3 Net Book Value:

A third method of looking at the plant value is to consider its original cost and depreciate it for the time it has been in place. The resulting net book value is then another value that can be placed on the plant. The Nyambai sawmill has a net book value of approximately $288,744, as reported by the USAID mission in Banjul. This represents the original installed costs less two years of depreciation. The $288,744 is approximately equivalent to 2,000,000 Dalasi.

3.4 Recommendation:

3.4.1 It is assumed that the capital cost of the Nyambai sawmill complete with all buildings, spare parts, containers, rolling stock and miscellaneous equipment will be 2,000,000 Dalasi, and will include a lease of the Nyambai sawmill site for a period of 10 years. This asking price is contingent upon the likely granting of an income tax holiday for 5 years and a waiver of import duties on equipment. These advantages are part of the standard incentive package under the Investment Code of The Gambia. Should this not be the case, the asking price for the mill would have to be adjusted downward since the cashflow to service the debt incurred in the purchase of the existing and additional equipment would be substantially reduced.

3.4.2 In an effort to encourage investors, the 2,000,000 capital is expected to be set up as a 12 percent, 6 payment loan covering a total of five years and one day. Each loan payment will be 434,330 Dalasi, with the first payment due on closing of the sale of the mill assets. The remaining balance will be paid in five equal installments due on the first day of each subsequent year. The annual amounts of capital repayment and interest payments is shown on the financial analysis worksheet.

3.4.3 Additional capital investment will be required for essential additions to the plant and equipment as outlined below. The cost of these improvements and equipment is estimated to be 240,000 Dalasi. These improvements will be required the first year. It has been assumed that all future improvements would be expensed in the year incurred.

3.4.3 The above arrangements for the sale of the Nyambai sawmill would be equitable for all parties concerned. Since the privatization of the sawmill offers a highly profitable investment opportunity to a qualified investor, the Government would be entitled to insist on the net book value as a minimum and should, at the same time, grant the investor a standard tax holiday of five years. Conversely, the above terms and conditions are likely to prove attractive to a private investor who would be able to purchase physical assets in good condition at a price substantially lower than their replacement cost and recover the purchase price over a period of three and a half years.

For further details on the financial analysis of the projected operations of the sawmill under private ownership conditions, refer to Annex 2.

Section 4. Critical Issues for Privatization:

The consultants have reviewed a number of critical issues of a general (as defined by The Center for Privatization) and specific nature associated with the privatization of the sawmill.

4.1 Why Privatize?

The issue of why the sawmill should be privatized is very clear when the current economic returns the Government is receiving are compared to the results projected for the sawmill under private ownership. At the same time, the Government is contemplating several privatizations within the context of its Economic Recovery Program and the Nyambai sawmill could well be one of the first public sector enterprises to be divested.

4.2 What Would Happen to the Redundant Employees?

The question of continued employment for existing sawmill employees is not an issue. The Government of The Gambia will permit the owners of privatized firms to hire whomever they desire. In the case of the Nyambai sawmill, the total number of persons employed is expected to increase from 24 to 26, except 6 of the 26 are expected to be contractors.

4.3 Debt Level:

The proposed purchase arrangement has been structured to require an investment in plant, equipment and working capital of 1,127,000 Dalasis in the first year with a first year debt of 2,208,000 Dalasis. The debt to equity ratio is 1.96, a relatively conservative ratio. Clearly, this is not a leveraged buyout situation. The buyer will have an interest in maintaining the equipment and operating it well.

4.4 Are the Sawmill Assets Over-valued?

The Nyambai sawmill is not an over-valued asset. It is probable the Government will be able to obtain the net book value of 2,000,000 Dalasis. Further, the sawmill equipment has been operating for only two years and is in good condition.

4.5 "Protecting the People"

The forest resources developed by The Gambia Forestry Department and international donors represent a key resource which should be protected. The proposed sales arrangement would provide for royalty payments for the logs harvested to insure funding for the proper maintenance of the gmelina plantations.

It is recommended that 100% of these royalty payments be dedicated exclusively to plantation reforestation, fire prevention, thinning and other silvicultural activities. The precedent for this procedure was established when the Gambian-German Forestry Project was established.

The first step should be to update the cost of maintaining the four plantations. USAID would be justified in insisting on the use of the royalty for reforestation without support of overhead in the Forestry Department.

4.6 Need for Continued Afforestation

The original purpose of the Nyambai Plantations was to afforest an area from which the trees had been removed over a long period of time. To assure that the Nyambai sawmill does not contribute to the further loss of live trees in The Gambia, it is recommended that the Government of The Gambia establish a sawmill license program to permit a sawmill to saw specific species. In this way, the Nyambai sawmill might be licensed to saw only gmelina but not to saw rosewood or jalo, which are much more valuable species. It should be noted that the German Forestry project which processes only dead rosewood and/or mahogany has consistently refused offers from local farmers to fell green lumber from such valuable trees growing in their fields or gardens.

4.7 "Unacceptable" Buyers?

This is not an issue in The Gambia. In fact, foreign joint venture partners may be sought on account of their financial resources and financial capabilities. There is some concern in The Gambia that other projected parastatal divestment activities, requiring at least 6,000,000 Dalasis, may soak up the current liquidity, leaving little for future divestments unless foreign investors are invited to participate in such business ventures.

4.8 Host Country Organization-Divestiture Unit

The National Investment Board (NIB) is supervising the divestment effort as part of the national recovery program. The NIB has the confidence of the key players in the government and appears to have the willingness to address the issues necessary to facilitate divestment.

4.9 Local Capital Flight--or Return?

In the case of The Gambia, limited local capital resources are available. However, interest in the sawmill is high and the short payback of this investment is likely to attract other investors, local and foreign.

4.10 Lack of Management Skills

This lack is probably the most serious limitation of all which exists in The Gambia. While there are several traders, and trader/furniture manufacturers, it is not clear if these traders will be able to effectively manage a manufacturing facility.

Given the low level of technology of the sawmill, the key management skills needed will be those of motivating employees and keeping the mill operating on a continuous basis. For this reason, a joint venture arrangement with a qualified foreign investor would be favored by the Government.

4.11 Employee Motivation

The private ownership of the sawmill with the attendant change in personnel will be a stimulus to those employees who remain after the change of ownership. With a reasonable manager, the mill should have no problem achieving the production and quality goals. When the goals are established and the entire labor force knows what is expected, motivation becomes an easier task. The economic analysis provided for a 25% pay increase for the operation in private hands. However, this increase could be contingent on achieving specific management goals.

4.12 Improving the Quality of Sawn Lumber

A key to achieving the lumber price assumed in the analysis is the improvement of product quality. The quality of the gmelina lumber will be improved if it is dried properly, and by improving sawing practices. The key to product quality is paying attention to a number of minor details such as stacking the lumber properly with the stickers properly placed, saw sharpening and setup, lubrication of the equipment, etc.

4.13 Improving the Productivity of Sawmill Operations

One of the benefits of keeping the mill operating on a regular basis will be a radical increase in productivity and lumber production, together with a more standardized output. Of course, a motivated labor force will be essential to assure the continued productivity of the mill.

4.14 Need for Appropriate Technology

Based on a close observation of the logging and milling operations, it appears that less reliance on chain saws and trucks and more reliance on hand operating felling saws and the use of oxen to skid logs would be more in keeping with the technological level of The Gambia at this time. Chainsaws were introduced into The Gambia only six years ago and their operations have proved costly in terms of foreign exchange for spare parts. In addition, once hand tools are acquired, they are relatively easy to maintain and would save foreign exchange.

The use of oxen for skidding logs is being considered by the Gambian-German Forestry Project starting in late 1986 or early 1987. By scheduling the logging during just the dry season, an adequate supply of oxen should be available, since the farmers use the oxen primarily during the wet season to till their land.

4.15 Sale of Assets versus Lease

A great temptation in privatization is to provide a lease or long term payment for a facility to attract a large number of bidders, not all of whom have adequate financial resources. In the case of the Nyambai sawmill, this is not recommended. Sawmills need maintenance to continue to be viable production units. In North America, sawmills sold on long term leases frequently have been returned to the owners in such a horrible condition that in some cases the only value remaining is scrap iron.

It is important that the new owner have significant equity risk in the sawmill and provide adequate fire insurance coverage for the term of the debt to assure the investment receives the attention it will require. This is why the privatization of the sawmill is structured as a sale of assets with significant equity exposure of 1,127,000 Dalasis the first year. The capital payment schedule is for six equal payments of 434,000 Dalasis at the beginning of each year. Under this schedule and with a five year tax holiday, the new owner should be able to return his invested capital in 3.6 years if he operates the sawmill in the conservative mode proposed. If the new owner takes advantage of the other opportunities the Nyambai sawmill complex offers, such as restarting the large side of the mill, sawing imported redwood cants or logs, or doing secondary manufacturing on site, substantial additional profit opportunities are likely to be tapped.

4.16 Need for Levying Customs and Excise Duties on Imported Logs and Sawn Lumber:

The license regulation should permit the sawing of imported timbers or squares. The license regulations should also require all imported logs or squares to be branded at the customs entry border points. The branding of imported logs and sawn lumber would facilitate the proper collection of duties which appears to fall short of the official rates. Only 100,000 Dalasis of imported logs and lumber were declared during the first four months of Fiscal Year 1985-86. This is equivalent to only 34 cubic meters of lumber or less than two large truck loads. However, importers stated they purchased 1,750 cubic meters of lumber and logs for the same period. This quantity should have

an import value of at least 1,750,000 Dalasis yielding 367,000 Dalasis in duties and taxes based on the current schedule. There is a real opportunity for the Government to improve the collection of duties. Further, not only would the government benefit from improved collections, but the local lumber industry would be able to grow and develop more rapidly if duties were properly assessed and levied, even at a lower rate than the current rate.

4.17 Need for Objective Bidder Selection Process

Given the level of interest in investing in the Nyambai sawmill, it is important that the transaction be handled at arm's length and not become a political award To that end, it is proposed that follow-on technical assistance be provided to develop a thorough financial and technical prospectus telling the story of the Nyambai sawmill opportunity. In addition, it is important that a thorough set of criteria be established to select the successful bidder. A key step is the agreement of all parties on this evaluation criteria.

Section 5. Proposed Technical Assistance Activities for the Privatization of the Nyambai Sawmill

5.1 The follow-on activities necessary to achieve the privatization of the sawmill include the preparation of a technical and financial prospectus, and the definition of strict buyer criteria and selection procedures. In addition, a public meeting with the prospective buyers would be held and followed by private meetings with those expressing definite interest. After the bids have been received, the consultant would assist in reviewing the bids and bidders and developing a recommendation for the inter-ministerial committee. Finally, the Government of The Gambia may also request assistance in the negotiation of the sales agreement.

5.2 The detailed schedule is shown below with the expected mandays shown:

Activity	Complete E. Date	Days in US No PrDm	PrDm Days In Wn or In	PrDm Days in Banj	PrDm Days Tot	Total Work Days
1. Review 10/29/86 report by USAID, & The Government of The Gambia.	12/1/86					0
2. Prepare sale prospectus draft & criteria to select winning bid.	1/15/87	19			19	19
3. Review prospectus draft & selection criteria w/USAID & GOB officials, issue final edition in Banjul. Meet with potential purchasers to discuss & explain offering prospectus.	2/5/87		7	16	23	17
4. Circulation of prospectus & solicit bids by the Government of The Gambia.	3/10/87					0
5. Review bids by interministerial committee. Screen bids, bidders, develop recommendation to committee.	4/15/87		8	16	24	17
6. Review by Cabinet, forward to the President of The Gambia.	4/30/87					0
7. Presidential approval.	5/15/87					
8. Award of bid and negotiation of privatization arrangements.	6/15/87					0
9. Closing of Privatization Sale.	7/1/87					0
10. Total Technical Assistance		19	23	48	90	70

5.3 The total cost of the proposed technical assistance effort has been estimated at US$67,000, broken down as follows:

(i)	Direct labor	$18,600
(ii)	Indirect labor	17,100
(iii)	Direct costs	7,300
(iv)	Consultant's fee	4,300
(v)	Level of effort	47,300
(vi)	Travel	15,300
(vii)	Per diem	5,700
	Grand Total:	US$68,300

Further details are provided in Annex 5.

5.4 The proposed technical assistance effort will call for one expert in commercial sawmill and forestry operations and a financial specialist with prior experience in priva ization in an African environment. Both experts should be familiar with the preparation of technical and financial prospectus documents and the definitions of bid selection criteria. Additionally, the financial specialist should be skilled in the negotiation of sales and/or loan agreements.

ANNEX I

SAWMILL DETAIL ASSUMPTIONS AND ANALYSIS

1. Logging Operations

1.1 Log (Stumpage) Costs or Royalty

The Republic of The Gambia currently does not charge the Nyambai sawmill for the trees it cuts. It does, however have a schedule of charges for other timber users. A royalty of 40 to 50 Dalasis per tree is charged for each tree removed from the forest. The royalty depends upon the species harvested.

Charging royalty on a tree basis is difficult to administer and impossible to audit. Someone must count the trees or the stumps from which they came. It is proposed that the royalty be changed from a tree basis to a cubic meter basis. This is more in keeping with normal sawmill accounting practices, and the quantities can be roughly confirmed from other operating statistics.

Using the current royalty payment schedule as a base, it is recommended that the royalty be set at 70 Dalasis per cubic meter. This is roughly equivalent to 50 Dalasis for a typical gmelina tree 11 meters in height, with a butt diameter of 33 cm, a small end or top diameter of 18 cm and an average taper of 1.38 cm per meter. The wood content of the merchantable bole of such a tree would be .055 cubic meters. It would take 1.8 such trees to make a cubic meter. 1.8 X 40 = 73. Therefore, the starting royalty of 70 Dalasis per cubic meter is in line with past practice.

It may be wise to establish the royalty fee based upon the season logged. In that way, a higher fee could be charged for logging during the wet season to encourage the mill owner to log only during the dry season.

1.2 Logging Costs

The current logging operations are being done by the sawmill crew during the frequent times when the sawmill is not

operating. The trees are being felled in an unsafe mannor using chain saws, with the transportation of the 2 to 2.4 meter long blocks to forest roadside being done by hand and skidding cable attached to the log hauling truck. As a result of such operations, the forest is only being logged along the forest roads with few trees being removed more than 10 meters from roadside.

It is proposed that the logging would be done by logging contractors, using oxen as the skidding traction device, working only during the dry season. In this way it should be easy to contract with farmers who do not have a need of an ox during the dry season, and who will be using the ox all of the wet season. This schedule will also assure the forest roads are not torn up during the wet season by keeping vehicles off the roads during the wet season.

It is expected that the oxen will work 5 hours per day each, and that the tree stems will be bucked into two segments with lengths of 4 to 7 meters for skidding to forest roadside. The stems will be bucked into the 2 to 2.4 meter lengths at forest roadside prior to transport to the sawmill log yard.

The cost of logging is based upon a four man two oxen crew removing 7.65 cubic meters per day for 36 weeks or 180 days per year. Based on the observed timber, it is expected this will mean removing an average of 14 or 15 trees per day. It will also mean each ox will have to skid 14 or 15 segments per day during the five hour day. In order to build the needed log inventory for the wet season, a second crew of four men and two oxen will start 3 months before the wet season begins and log at the same 8 cubic meters per day rate. In this way the normal log inventory will be maintained at a 40 cubic meters or enough logs to last a week, with a build up of an addition 480 cubic meters during the last three months before the beginning of the wet season.

Logging Cost Estimate	Units	Value
Cost of Oxen for Log Skidding / Day	Dalasi	10
Oxen Needed	Count	2
Cost of Oxen per Day	Dalasi	20
Number of Loggers Needed	Persons	4
Cost of Logger per Day	Dalasi	10
Cost of Loggers	Dalasi	40

Total Cost of Logging per Day	Dalasi	60
Logged Volume per Day	LGM3	7.66
Log Production Cost per LGM3	Dalasi	7.83

LGM3 = Log Cubic Meters

1.3 Log Hauling Costs

The logs will be hauled by a tractor and trailer or by contract truck from the forest roadside to the sawmill log storage yard. The loading will be by means of a 'Big Stick' log loader driven by the truck or the tractor power take off. This equipment was developed by the pulpwood industry in the United States in the 1950's. It was developed for the same purpose for which it will be used in the Gambia, to load large logs onto a truck or trailer. The capital cost of the tractor and the loading equipment has been included in the estimate of the additional capital required.

The cost of the hauling will be the operating cost of the truck or tractor and the two man hauling crew. It is estimated the tractor and trailer will have to make 2 trips per day to haul the 7.65 cubic meters of logs. During the months when two logging crews are working, extra hours may be necessary to move the volume of logs being logged. The capital and spare parts cost of the tractor is included in the sawmill capital cost estimates.

Log Haul Cost Estimate	Units	Value
Tractor Fuel Usage Rate	Liters/Hr	2.5
Tractor Hours Operated per Day	Hours	8
Cost of Fuel per Liter	Dalasi	4.5
Cost of Fuel per Day	Dalasi	90
Number of Loaders Needed	Persons	2
Cost of Loader per Day	Dalasi	10
Cost of Loaders	Dalasi	20
Total Cost of Log Haul per Day	Dalasi	110
Hauled Volume per Day	LGM3	7.66
Hauling Cost per LGM3	Dalasi	14.36
Log Production Cost per LGM3	Dalasi	7.83
Total Cost of Logging per LGM3	Dalasi	22.19

1.4 Summary of Unit Log Cost and Total Annual Log Costs

Summary of Unit Cost and Annual Cost of Logs	Units	Unit Value	Annual Value
Annual Volume of Logs Used	LGM3		1835
Total Cost of Logging per LGM3	Dalasi	22.19	40,719
Cost of Log Royalty-Stumpage	Dalasi	70.00	128,450
Total Cost Delivered Logs per LGM3	Dalasi	92.19	169,169

LGM3 = Log Cubic Meters

2. Sawmill Operations

2.1 Production Rate

The current sawmill operations are far from the potential of the mill. Hindered by a lack of fuel, the mill can operate only an estimated 354 hours per year. During this operating time, the production rate was 2.38 cubic meters of lumber per day. This production rate is 20 percent of the average production rate achieved in North America during the 1950's. Under private operation, it is expected the average production rate will increase from 2.38 cubic meters of lumber per day to 3.44 cubic meters per day, a 45 percent increase. This increased rate would still be only 30 percent of that regularily achieved in North America. At the same time, instead of operating 354 hours, the sawmill has been projected to operate 1980 hours. The production rate of 3.44 cubic meters per day could easily be exceeded under good management. However, in the interest of being conservative, a higher rate is not being forecast at this time.

2.2 Lumber Recovery

The lumber recovery achieved by any sawmill depends upon the diameter of the law sawn, and the ability to position the log properly when the first cut is made on the log. The Nyambai sawmill small side will be sawing logs of lengths varying from 1.8 meters to 2.4 meters. The small end diameters will range from 18 to 45 centimeters. The sawmill does not have any fancy positioning devices, and as a result is not likely to achieve the recovery possible with some electronic equipment the North American companies possess. The possible recovery from the bolter equipment is reported to range from 54 percent to 60 percent. The recovery projections used for the Nyambai sawmill have been reduced to assure a conservative valuation, and a range of 42 to 48 percent cubic is being used, with the average expected to be 45.

2.3 Log Usage

The sawmill log usage is based on the lumber cubic recovery of 45 percent, and the lumber production rate of in a log usage of 3.44 cubic meters per day results in a log usage rate of 7.64 cubic meters per day. This recovery rate is well below that achieved in North America. This recovery is again an attempt to develop a conservative analysis.

2.4 Mill Manning Table

Under government ownership, the current mill manning includes a total of 24 people, including the management. The manning table below shows the mill manning for the existing government operation and that of the planned private operation:

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Nyambai Sawmill Manning and Payroll Costs
Under Government Operations & Private Operations

Gov't Grade	Monthly Salary	Gov't Manning	Private Manning	TOTAL Monthly Gov't	TOTAL Cost Private
4	216	12	9	2592	1944
5	244	5	5	1220	1220
5/6	262	1	1	262	262
8	355	1	1	355	355
Crew Total		19	16	4429	3781
Driver	201	1	0	201	0
Manager	650	1	1	650	650
Asst Mgr	457	1	1	457	457
Bookkeeper	244	1	1	244	244
Storekeeper	244	1	1	244	244
Management		5	4	1796	1595
Total Manning		24	20		
Total Payroll Dalasi Per Month				6225	5376

Payroll Analysis with Fringe Benefits and Incentive Pay

	Government	Private
Total Payroll Dalasi Per Month	6225	5376
Percentage of Incentive Pay Over Gov't Pay	0	25.0
Payroll Incentive Pay	0	1344
Payroll With Incentive Pay	6225	6720
Fringe Benefit Percentage	18.74	22.30
Amount of Fringe Benefits	1167	1499
Payroll with Incentive and Fringes (loaded)	7392	8219
Paid Hours per Month	173.3	173.3
Loaded Dalasi Cost Per Paid Hour	42.65	47.43
Number of people on payroll	24	20
Loaded Dalasi Cost Per Man Hour	1.78	2.37
Loaded Average Cost Dalasi Per Man Day	14.22	18.97

Note that the same basic salary rates were used as the starting point for pricing out each manning plan.

The following table summarizes the change in crew manning under private ownership from the current apparent government arrangement:

Government and Private Ownership Crew Manning by Functional Area

Work Area	Number of Crew Persons Government	Private	Change
Headsaw	5	3	-2
Saw Doctor	1	1	
Edger	2	2	
Cutoff Saw	1	1	
Off Bearing	2	2	
Cart - Transport	2	1	-1
Firewood	2	2	
Lumber Drying	4	4	
Total Crew	19	16	-3

The private ownership manning plan provides for a total of 20 crew and management employees in the sawmill rather than the 24 under government operations. If the six full time equivalent logging and hauling contractors were included in the head count, the totals would be 26 under private ownership, and 24 under government operations. If the production in the sawmill increases above that projected, it may be necessary to add additional crew.

2.5 Sawmill Operating Cost Summary

2.5.1 The following is a summary of the sawmill operating costs under both government and private ownership for base year 1985/86.

Labor Cost Element	Annual Dalasi Cost Gov't	Private
Labor Cost per Paid Hour	42.65	47.43
Paid Hours Per Year	2,080	2,080
Operating Hours Per Year	354	1,920
Labor Cost Per Year	88,712	98,654

Power Cost Calculation	Annual Dalasi Cost Gov't	Private
Connected Horsepower of Motors	105	105
Kilowatts per horsepower	0.75	0.75
Efficiency Percent	88.00	88.00
Cost Dalasi per Kilowatt (1)	0.77	0.77
Cost of Power Per Operating Hour	68.91	68.91

(1) Per the Gambia Utility Board Rate Schedule July 1, 1986.

Note this power cost should be high as it assumes the motors are all operating under load all the time. The actual time under load will probably be only 20% of the time at the predicted production rate. Again, the conservative approach has been taken.

Repair and Non-Capital Improvements Costs per Operating Hour	Annual Dalasi Cost Gov't	Private
Vehicle Operation and Maint	21.19	8.00
Sawmill Repair Cost Dalasi Per Opr Hr	70.62	20.00
Non Capitalized Annual Improvements D/Hr	62.14	15.00

The following summarizes the operating cost per year and operating hour for both government operations and expected private operations.

	Dalasi Per Year Gov't	Private	Dalasi/Op Hour Gov't	Private
Operating Hours Per Year	354	1,980		
Labor Cost	88,712	98,654	250.60	51.38
Electrical Power Cost	24,393	132,300	68.91	68.91
Vehicle Opn & Maint Cost	7,500	15,360	21.19	8.00
Repairs Cost	25,000	38,400	70.62	20.00
Non Capital Improvements	22,000	28,800	62.14	15.00
Total Annual Operatn Cst	167,605	313,514	473.46	163.29

2.5.2 Sawmill Fixed Costs Under Government Operations

1. Fixed Costs

The fixed costs of the operation include such things as the interest on working capital, insurance, and the non cash charge of depreciation. However, since the government operation has not charged depreciation on the mill equipment and buildings, the comparative operating statements will be developed without consideration of depreciation.

2. Working Capital

The current government operation has an average of one days logs on hand and two days lumber production. The total working capital is then:

	Volume M3	Dalasi Unit Value	Dalasi Total Value
Logs	5	100	500
Sawn Lumber	4	760	3,040
Total Working Capital			3,540
Annual Interest rate on Working Capital			28%
Interest on Working Capital Gov't Opns			991
This is equal to a monthly charge of			83 Dalasi

This amount is insignificant, and will be ignored in the operating cost analysis.

3. Spare Parts

While some spare parts are present under government ownership, the quantity is far below that needed to maintain the sawmill in operating order over time. No spare parts inventory exists,and no attempt has been made to quantify the value of the spare parts at this time.

4. Apparently the Government sawmill does not have insurance.

5. Summary of Fixed Costs Under Government Operation: Fixed costs are insignificant and have been assumed to equal zero.

2.5.3 Fixed Costs Under Private Ownership Operations

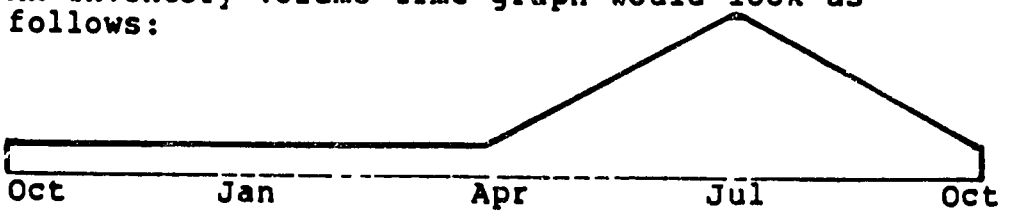
1. Working Capital Under Private Ownership

In contrast to the low working capital carried by the government operation, the working capital needs of the business operating under private ownership is much higher, as follows:

Log Inventory:

The log inventory is planned to be one week for 6 months of the year, and then go from one week to 13 weeks during the next 3 months, and then reduce to one week over the next three months.

An inventory volume time graph would look as follows:



Log Inventory Profile For One Year

The working capital required to maintain this log inventory and the associated lumber inventory required for air drying the lumber is shown on the following page.

Log Inventory	Units	Value
Logs for one weeks usage	LGM3	26.40
Value of each cubic meter	Dalasi	92.21
Value of one weeks logs	Dalasi	2,434.34
Maximum Weeks in Inventory	Weeks	13
Value of 13 weeks inventory	Dalasi	31,646.47
Weeks with one week Inventory	Weeks	26
Weeks-Dalasi of inventory	WD	63,292.94
Weeks with 1 to 13 weeks inv	Weeks	26
Weeks-Dalasi of 1-13 Inventory	WD	411,404.14
Total Weeks-Dalasi of log Inventory for the Year	WD	474,697.08
Total Weeks in one year	Weeks	52
Average Dalasi Tied Up In Log Inventory	Dalasi	9,128.79

Lumber Inventory	Units	Value
Lumber Produced Each Week	LMM3	17.18
Value of each cubic meter (cost)	Dalasi	740.00
Value of one weeks lumber	Dalasi	12,713.20
Normal Weeks in Inventory	Weeks	13
Value of 13 Weeks Lumber Inventory	Dalasi	165,271.60
Value of Spacers for Drying	Dalasi	80,000.00

Working Capital for Spare Parts

Additional Spare Parts to Operate the Sawmill	Dalasi	200,000.000

Total Working Capital Summary	Units	Value
Average Dalasi Tied Up In Log Inventory	Dalasi	9,128.79
Value of 13 Weeks Lumber Inventory	Dalasi	165,271.60
Value of Spacers for Drying	Dalasi	80,000.00
Additional Spare Parts to Operate the Sawmill	Dalasi	200,000.000
Total Working Capital in Inventory	Dalasi	454,400.39

LGM3 = Log Cubic Meters
LMM3 = Lumber Cubic Meters
WD = Week-Dalasi, The Product of Weeks and Dalasi

Average Interest on Working Capital	Units	Value
Total Working Capital in Inventory	Dalasi	454,400.39
Interest Rate on Working Capital	Percent	28
Annual Interest on Working Capital	Dalasi	127,232.11
Number of Months per year	Months	12
Monthly Average Interest Payment	Dalasi	10,602.68

2. Cost of Insurance

The estimated cost of fire insurance is 1% of the basically unprotected sawmill and working capital asset replacement value. The insurance premium would be:

Insurance Premium Calculation	Unit	Value
Original replacement value	Dalasi	2,500,000.00
Working Capital Investment	Dalasi	454,400.00
Total Capital Investment	Dalasi	2,954,400.00
Insurance Premium Rate	Percent	1
Annual Insurance Premium	Dalasi	29,540.00
Number of Months per year	Months	12
Monthly Insurance Premium	Dalasi	2,461.66

Summary of sawmill Fixed Costs per Month

Monthly Summary of Cash Fixed Costs

Cash Fixed Costs	Unit	Value
Monthly Insurance Premium	Dalasi	2,461.66
Monthly Average Interest Payment on Working Capital Invested	Dalasi	10,602.68
Total Cash Fixed Cost	Dalasi	13,064.34

3. Sales Values of Products Sold

The two products to be sold from the Nyambai sawmill under private operation will be rough dry lumber and Gmelina firewood bundled per the government's specifications.

For the purpose of the analysis, a sales value of 1900 Dalasi per cubic meter was used as the sales value. See the discussion of the Gambia lumber market in the Current Operations and Markets Section. The 1,900 Dalasi per cubic meter compares with the current government established price of 760 Dalasi per cubic meter for rough 'green' gmelia lumber.

The firewood will be bundled into standard packages and sold for 1 Dalasi per bundle. Two men have been added the the manning schedule to bundle the firewood. Each bundle of firewood is assumed to contain 0.71 cubic feet of wood or bark. This conversion is based on research conducted by the Gambian-German Forestry Project.

No revenue has been claimed for the plantation logging residue.

DBA SAWMILL PLANNER (C) 1986 OPERATIONS NYAMBAI SAWMILL SAWING GMELINA
GMELINA GOVERNMMENT OPRN SELLING RGH GRN LUMBER,PROFIT W/O DEPRECIATION
LGM3=LOG CUBIC METERS, LMM3=LUMBER CUBIC METERS,CCF=100 CU FT, D=DALASI
REPUBLIC OF THE GAMBIA LOG AND LUMBER MIX AND VALUE REPORT

	LOG GRADE	SML END DIAMETER	LOGS USED LGM3 VOL	PERCENT VOLUME	D/LGM3 ROYALTY	CF/ LGM3	PERCENT VALUE
1.	ALL	ALL	234.0	100.0	0.00	35.3	100.0
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
TOTALS			234.0	100.0			100.0
AVERAGES					0.00	35.3	
TOTAL VALUE OF LOG MIX USED M DALASI					0.00		

LUMBER MIX AND PRICE REPORT SPECIES: GMELINA

	SIZE TYPE	LUMBER GRADE	CUTPUT NET LMM3 VOLUME	PERCENT VOLUME	NET PRICE	LUMBER D/LMM3	PERCENT D VALUE
1.	ALL	ALL	105.3	100.0		760.00	100.0
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
TOTALS			105.3	100.0			100.0
AVERAGE LUMBER PRICE						760.00	
TOTAL VALUE OF LUMBER MIX PRODUCED M DALASI						80.03	

DBA SAWMILL PLANNER (C) 1986 OPERATIONS NYAMBAI SAWMILL SAWING GMELINA
GMELINA GOVERNMMENT OPRN SELLING RGH GRN LUMBER,PROFIT W/O DEPRECIATION
LGM3=LOG CUBIC METERS, LMM3=LUMBER CUBIC METERS,CCF=100 CU FT, D=DALASI

REPUBLIC OF THE GAMBIA RECOVERY & DATA INPUT REPORT

	D UNIT PRICES	CF/ LGM3	PERCENT CUBIC	RECOVERY PER LGM3	SALES D PER HOUR	UNITS
NET LUMBER	760.00	16.9	47.9	0.450	226.10	LMM3
FIREWOOD	1.00	12.0	34.1	16.944	11.20	BDL
DRY FIREWOOD	1.00	0	0	0	0	BDL
SAWDUST	0	6.4	18.0	6.400	0	CF
SHAVINGS	0	0	0	0	0	CF
MIX SHRINKAGE		0	0			
TOTAL CUBIC		35.3	100.0			
BARK FIREWOOD	1.00	3.5	10.0	4.972	3.29	BDL
TOT RESD D/HR					14.49	D/HR
ROUGH LUMBER	0	16.9	47.93	0.450		LMM3
LOGS	0.00	35.3	100.00	0		LGM3

	SOLD ROUGH GRN	SOLD S4S GRN	SOLD S4S DRY	WEIGHTED AVERAGE
PERCENT VOLUME SOLD	100.0	0	0	
ADJUSTD % VOLUME SOLD	100.0	0	0	
PROD SAWN SIZ CF/LMM3	37.6	37.6	37.6	37.60
PERCENT VOL SHRINKAGE	0	0	6.0	
PERCENT PLANER TRIM	0	0	0	
SOLD SIZE AVG CF/LMM3	37.6	37.6	35.3	37.60
SAWMILL RGH PRODUCT %	100.0	0	0	

SAWMILL RGH/NET RATIO	1.000	
VARIABLE COST D/HOUR	473.46	
FIXED COST MD/MONTH	0	
NET LUMBER PER DAY LMM3/DAY	2.38	
GROSS LUMBER PER DAY LMM3/DAY	2.38	
SPECIES DENSITY CF/BDL	0.71	CUBIC FEET PER FIREWOOD BUND
HOURS PER DAY	8.00	
HOURS PER MONTH	160.00	
HOURS PER PERIOD	353.96	
VOLUME OF THIS SPECIES LGM3	234.00	LOG CUBIC METERS SAWN PER YE

HOURLY PRODUCTION

NET LUMBER PER HR LMM3/HR	0.30
GROSS LUMBER PER HR LMM3/HR	0.30
LOGS USED LGM3/HR	0.66

DBA SAWMILL PLANNER (C) 1986 OPERATIONS NYAMBAI SAWMILL SAWING GMELINA
GMELINA GOVERNMMENT OPRN SELLING RGH GRN LUMBER,PROFIT W/O DEPRECIATION
LGM3=LOG CUBIC METERS, LMM3=LUMBER CUBIC METERS,CCF=100 CU FT, D=DALASI
REPUBLIC OF THE GAMBIA MATERIAL FLOW REPORT GMR.3

	RECOVERY	D/UNIT	UNIT LABEL	VOLUME / HOUR	VOLUME / DAY	VOLUME /MONTH	GMELINA VOLUME / YEAR
HOURS OPRN					8	160	354
NET LUMBER	0.45	760.00	LMM3	0.3	2	48	105
GRN FIREWOOD	16.94	1.00	BDL	11.2	90	1792	3965
DRY FIREWOOD	0	1.00	BDL	0	0	0	0
SAWDUST	6.40	0	CF	4.2	34	677	1498
SHAVINGS	0	0	CF	0	0	0	0
BARK FIRWOOD	4.97	1.00	BDL	3.3	26	526	1163
LOGS	1.00	0.00	LGM3	0.7	5	106	234
CF/LGM3	35.30	0	CCF	0.2	2	37	83

VALUE REPORT

	LOG D/CCF	LUMBER D/LMM3	LOG D/LGM3	D/HOUR	D/DAY	MD PER MONTH	GMELINA MD PER YEAR
NET LUMBER	968.72	760.00	342.01	226	1809	36.2	80.0
GRN FIREWOOD	47.99	37.65	16.94	11	90	1.8	4.0
DRY FIREWOOD	0	0	0	0	0	0	0
SAWDUST	0	0	0	0	0	0	0
SHAVINGS	0	0	0	0	0	0	0
BARK FIRWOOD	14.08	11.05	4.97	3	26	0.5	1.2
TOTAL RESIDL	62.07	48.70	21.91	14	116	2.3	5.1
TOTAL SALES	1030.80	808.70	363.92	241	1925	38.5	85.2
LOG COST	0.00	0.00	0.00	0	0	0.0	0.0

PROFIT & LOSS W/O DEPRECIAT	LOG D/CCF	LUMBER D/LMM3	LOG D/LGM3	D/HOUR	D/DAY	MD PER MONTH	GMELINA MD PER YEAR
LUMBER SALES	968.72	760.00	342.01	226	1809	36.2	80.0
RESID'L SALES	62.07	48.70	21.91	14	116	2.3	5.1
TOTAL SALES	1030.80	808.70	363.92	241	1925	38.5	85.2
VARIABLE COST	2028.53	1593.68	717.17	474	3793	75.9	167.8
CONTRIBTN RTL	-1000.56	-784.98	-353.25	-234	-1868	-37.4	-82.7
FIXED COST	0	0	0	0	0	0	0
CASHCOST RTL	-1000.56	-784.98	-353.25	-234	-1868	-37.4	-82.7
LOG COST	0.00	0.00	0.00	0	0	0.0	0.0
PROFIT DALASI	-1000.56	-784.98	-353.25	-234	-1868	-37.4	-82.7

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DBA SAWMILL PLANNER (C) 1986 OPERATIONS NYAMBAI SAWMILL SAWING GMELINA
GMELINA PRIVATE OPRN SELLING RGH DRY LUMBER PROFIT W/O DEPRECIATION
LGM3=LOG CUBIC METERS, LMM3=LUMBER CUBIC METERS,CCF=100 CU FT, D=DALASI
REPUBLIC OF THE GAMBIA LOG AND LUMBER MIX AND VALUE REPORT

	LOG GRADE	SML END DIAMETER	LOGS USED LGM3 VOL	PERCENT VOLUME	D/LGM3 ROYALTY	CF/ LGM3	PERCENT VALUE
1.	ALL	ALL	1835.0	100.0	92.19	35.3	100.0
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
TOTALS			1835.0	100.0			100.0
AVERAGES					92.19	35.3	
TOTAL VALUE OF LOG MIX USED M DALASI					169.17		

LUMBER MIX AND PRICE REPORT SPECIES: GMELINA

	SIZE TYPE	LUMBER GRADE	OUTPUT NET LMM3 VOLUME	PERCENT VOLUME	NET LUMBER PRICE D/LMM3	PERCENT D VALUE
1.	ALL	ALL	825.8	100.0	1900.00	100.0
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
TOTALS			825.8	100.0		100.0
AVERAGE LUMBER PRICE					1900.00	
TOTAL VALUE OF LUMBER MIX PRODUCED M DALASI					1568.93	

DBA SAWMILL PLANNER (C) 1986 OPERATIONS NYAMBAI SAWMILL SAWING GMELINA
GMELINA PRIVATE OPRN SELLING RGH DRY LUMBER PROFIT W/O DEPRECIATION
LGM3=LOG CUBIC METERS, LMM3=LUMBER CUBIC METERS,CCF=100 CU FT, D=DALASI

REPUBLIC OF THE GAMBIA RECOVERY & DATA INPUT REPORT

	D UNIT PRICES	CF/ LGM3	PERCENT CUBIC	RECOVERY PER LGM3	SALES D PER HOUR	UNITS
NET LUMBER	1900.00	15.9	45.0	0.450	817.00	LMM3
GRN FIREWOOD	1.00	12.0	34.1	16.944	16.19	BDL
DRY FIREWOOD	1.00	0	0	0	0	BDL
SAWDUST	0	6.4	18.0	6.400	0	CF
SHAVINGS	0	0.0	0.0	0.000	0	CF
MIX SHRINKAGE		1.0	2.9			
TOTAL CUBIC		35.3	100.0			
BARK FIREWOOD	1.00	3.5	10.0	4.972	4.75	BDL
TOT RESD D/HR					20.94	D/HR
ROUGH LUMBER	0	16.9	47.93	0.450		LMM3
LOGS	92.19	35.3	100.00	0		LGM3

	SOLD ROUGH GRN	SOLD S4S GRN	SOLD S4S DRY	WEIGHTED AVERAGE
PERCENT VOLUME SOLD	0	0	100.0	
ADJUSTD % VOLUME SOLD	0	0	100.0	
PROD SAWN SIZ CF/LMM3	37.6	37.6	37.6	37.60
PERCENT VOL SHRINKAGE	0	0	6.0	6.00
PERCENT PLANER TRIM	0	0	0	
SOLD SIZE AVG CF/LMM3	37.6	37.6	35.3	35.30
SAWMILL RGH PRODUCT %	0	0	100.0	

SAWMILL RGH/NET RATIO	1.000	
VARIABLE COST D/HOUR	163.29	
FIXED COST MD/MONTH	13.06	
NET LUMBER PER DAY LMM3/DAY	3.44	
GROSS LUMBER PER DAY LMM3/DAY	3.44	
SPECIES DENSITY CF/BDL	0.71	CUBIC FEET PER FIREWOOD BUNDL
HOURS PER DAY	8.00	
HOURS PER MONTH	160.00	
HOURS PER PERIOD	1920.26	
VOLUME OF THIS SPECIES LGM3	1835.00	LOG CUBIC METERS SAWN PER YEA

HOURLY PRODUCTION

NET LUMBER PER HR LMM3/HR	0.43
GROSS LUMBER PER HR LMM3/HR	0.43
LOGS USED LGM3/HR	0.96

DBA SAWMILL PLANNER (C) 1986 OPERATIONS NYAMBAI SAWMILL SAWING GMELINA
GMELINA PRIVATE OPRN SELLING RGH DRY LUMBER PROFIT W/O DEPRECIATION
LGM3=LOG CUBIC METERS, LMM3=LUMBER CUBIC METERS,CCF=100 CU FT, D=DALASI
REPUBLIC OF THE GAMBIA MATERIAL FLOW REPORT GMR.4

	RECOVERY	D/UNIT	UNIT LABEL	VOLUME / HOUR	VOLUME / DAY	VOLUME /MONTH	GMELINA VOLUME / YEAR
HOURS OPRN					8	160	1920
NET LUMBER	0.45	1900.00	LMM3	0.4	3	69	826
GRN FIREWOOD	16.94	1.00	BDL	16.2	130	2591	31092
DRY FIREWOOD	0	1.00	BDL	0	0	0	0
SAWDUST	6.40	0	CF	6.1	49	979	11744
SHAVINGS	0.00	0	CF	0.0	0	0	0
BARK FIRWOOD	4.97	1.00	BDL	4.8	38	760	9124
LOGS	1.00	92.19	LGM3	1.0	8	153	1835
CF/LGM3	35.30	0	CCF	0.3	3	54	648

VALUE REPORT

	LOG D/CCF	LUMBER D/LMM3	LOG D/LGM3	D/HOUR	D/DAY	MD PER MONTH	GMELINA MD PER YEAR
NET LUMBER	2422.18	1900.00	854.96	817	6536	130.7	1568.9
GRN FIREWOOD	48.00	37.65	16.94	16	130	2.6	31.1
DRY FIREWOOD	0	0	0	0	0	0	0
SAWDUST	0	0	0	0	0	0	0
SHAVINGS	0	0	0	0	0	0	0
BARK FIRWOOD	14.09	11.05	4.97	5	38	0.8	9.1
TOTAL RESID	62.09	48.70	21.92	21	168	3.4	40.2
TOTAL SALES	2484.26	1948.70	876.88	838	6704	134.1	1609.1
LOG COST	261.17	204.87	92.19	88	705	14.1	169.2

PROFIT & LOSS W/O DEPRECIATN	LOG D/CCF	LUMBER D/LMM3	LOG D/LGM3	D/HOUR	D/DAY	MD PER MONTH	GMELINA MD PER YEAR
LUMBER SALES	2422.18	1900.00	854.96	817	6536	130.7	1568.9
RESID'L SALES	62.09	48.70	21.92	21	168	3.4	40.2
TOTAL SALES	2484.26	1948.70	876.88	838	6704	134.1	1609.1
VARIABLE COST	484.11	379.74	170.88	163	1306	26.1	313.6
CONTRIBTN RTL	2000.15	1568.96	706.00	675	5397	107.9	1295.5
FIXED COST	242.00	189.83	85.42	82	653	13.1	156.7
CASHCOST RTL	1758.16	1379.13	620.58	593	4744	94.9	1138.8
LOG COST	261.17	204.87	92.19	88	705	14.1	169.2
PROFIT DALASI	1496.99	1174.27	528.40	505	4039	80.8	969.6

ANNEX 2

SAWMILL FINANCIAL ANALYSIS

Financial Analysis

The following assumptions were made in the course of developing the financial analysis shown later in this Annex.

Analysis Period

A period of 10 years was selected as the analysis period. When using discounted cash flow analysis techniques, changes in the income stream beyond 10 years will have a minor impact on the valuation of the asset.

Discount Factor

A discount factor or hurdle rate of 15 percent corresponding to the current average cost reported by the Government of The Gambia was retained. In other words, an investment returning less than 15% would not be considered.

Residual Value

The residual value chosen was simply to liquidate the value of the working capital at the same value it was purchased. This is a very conservative residual value assumption.

First Year Profits

It was assumed the first year of operation would produce only 20% of the pretax gross profit before depreciation being projected for the 2nd through 10th year. In each of the following years, it was assumed the profit recovery would be 100 percent.

Inflation

No provision for inflation was built into the analysis. All the financial projections assume the current price-cost relationships will continue.

Interest Rates

The interest on the government loan for the unpaid balance of the sawmill is assumed to have a 12% interest rate. This rate is in keeping with the preferential development interest rates being granted in The Gambia. However, an interest rate of 28 percent has been assumed for working capital loans in keeping with current rates in The Gambia.

Capital Investment

The capital investment required to purchase the Nyambai facility can be determined in a variety of ways including the net present value of the income stream it will generate, the value of the equipment were it removed and sold on the machinery market, and the net book value of the two year old sawmill, allowing two years of depreciation.

Each of these methods has been used to value the equipment as is shown below.

Salvage Value

The estimated value of the sawmill equipment if it were to be removed from the mill and sold as used equipment. Is estimated the equipment and supplies would be worth 700,000 Dalasis valued in this manner.

Discount Income Stream

A popular means of valuing investments is to view the stream of earnings which they will produce and calculate the present value of this income stream. The net present value of the after tax cash flow before payments for interest or capital payments is 3,570,000 Dalasis after discounting it by 15 percent. That same income stream undiscounted totals 7,056,320 Dalasis.

Net Book Value

A third method of looking at the plant value is to consider its original cost and depreciate it for the time it has been in place. The resulting net book value is then another value that can be placed on the plant. The Nyambai sawmill has a net book value of approximately $288,744. This represents the original reported costs less two years of 10 year straight line depreciation. The $288,755 is approximately equivalent to 2,000,000 Dalasis.

For the purpose of this analysis, it is assumed the capital cost of the Nyambai sawmill complete with all buildings, spare parts, containers, rolling stock and miscellaneous equipment will be 2,000,000 Dalasis. It is assumed this purchase price will include a lease on the Nyambai sawmill for a period of 10 years. This asking price is contingent upon the granting of an income tax holiday for 5 years.

In an effort to encourage investors, the 2,000,000 capital is expected to be set up as a 12 percent, 6 payment loan covering a total of five years and one day. Each loan payment will be 434,330 Dalasis, with the first payment due on the sale of the mill assets. The remaining balance will be paid in five equal installments due each year. The annual amounts of capital repayment and interest payments is shown on the financial analysis worksheet.

Additional capital investment will be required for essential additions to the plant and equipment as outlined below.

Improvements to the existing plant including new road entrance for the log storage yard, movement of the sawdust pile, new tractor for moving logs from the plantation, a loading device for loading the logs on the trailer, new Datsun diesel pickup for running errands, getting parts, etc. New concrete piers will be needed in the lumber drying-storage area to assure the termites do not damage the stored lumber.

The cost of these improvements and equipment is estimated to be 240,000 Dalasi. These investments will be required the first year. No salvage value is assumed for the existing rolling stock which could be sold or perhaps reconditioned for a net investment savings.

It is assumed for purposes of this analysis that all future improvements would be expensed during the analysis period.

Depreciation on Investment

The existing mill is being valued at 2,000,000 Dalasi for the purposes of this analysis. An additional investment of 240,000 Dalasi is also depreciable. The working capital, on the other hand is not considered depreciable. A depreciation schedule of 10 years has been used to determine the annual depreciation. The annual depreciation charge then is:

Item	Value
Existing Plant Cost	2,000,000
Additional Capital Investment	240,000
Total Capital Investment	2,240,000
Depreciation per Year	224,000

It is assumed that depreciation will be charged to the operation even though a five year tax holiday has been declared. Should the depreciation not be declared and charged until after the tax holiday expires, the purchaser will benefit from lower future income tax payments.

Income Taxes and Duties

As discussed in the report text, the sawmill asking price is based upon the assumption that an income tax holiday and a waiver of import duty on equipment will be granted to the buyer as part of this transaction. Should this not be the case, the asking price for the mill would have to be adjusted downward since the cash flow to pay for the mill will be much slower in coming.

The corporate income tax rate for the years 6 thru 10 is assumed to be 50 percent.

FINANCIAL ANALYSIS SPREADSHEET NYAMBAI PRIVATE SAWMILL CPN 5 YR TAX HOLIDAY - GMELINA

INCOME/CASHFLOW PROJECTION FORM THOUSAND DALASI	INITIAL INVESTMENT	PROJECT YEAR 1	PROJECT YEAR 2	PROJECT YEAR 3	PROJECT YEAR 4	PROJECT YEAR 5	PROJECT YEAR 6	PROJECT YEAR 7	PROJECT YEAR 8	PROJECT YEAR 9	PROJECT YEAR 10
ANNUAL FIXED CAPITAL EXPENDITURES	2000.00	240.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ANN. INCR./DECR. IN WORKING CAPITAL	0.00	454.40									
TOTAL ANNUAL EXPENDITURES	2000.00	694.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FIXED CAPITAL GROSS	2000.00	2240.00	2240.00	2240.00	2240.00	2240.00	2240.00	2240.00	2240.00	2240.00	2240.00
LESS ACCUMULATED BOOK DEPRECIATION		-224.00	-448.00	-672.00	-896.00	-1120.00	-1344.00	-1568.00	-1792.00	-2016.00	-2240.00
PLUS WORKING CAPITAL GROSS	0.00	454.40	454.40	454.40	454.40	454.40	454.40	454.40	454.40	454.40	454.40
END OF PERIOD INVESTMENT	2000.00	2470.40	2246.40	2022.40	1798.40	1574.40	1350.40	1126.40	902.40	678.40	454.40
AVERAGE INVESTMENT		2235.20	2358.40	2134.40	1910.40	1686.40	1462.40	1238.40	1014.40	790.40	566.40
RESIDUAL VALUE											454.00
INCREMENTAL SALES/REVENUE		321.82	1609.10	1609.10	1609.10	1609.10	1609.10	1609.10	1609.10	1609.10	1609.10
INCREMENTAL COST OF SALES W/O DEPR		127.90	639.50	639.50	639.50	639.50	639.50	639.50	639.50	639.50	639.50
GROSS PROFIT W/O DEPR OR INTR		193.92	969.60	969.60	969.60	969.60	969.60	969.60	969.60	969.60	969.60
INTEREST PAID ON 12% GOVT LOAN		-188.00	-158.00	-125.00	-88.00	-46.00					
DEPRECIATION		-224.00	-224.00	-224.00	-224.00	-224.00	-224.00	-224.00	-224.00	-224.00	-224.00
NET BOOK INCOME		-218.08	587.60	620.60	657.60	699.60	745.60	745.60	745.60	745.60	745.60
ADD NON-CASH CHRGS(DEPR,DEPL,AMORT)		224.00	224.00	224.00	224.00	224.00	224.00	224.00	224.00	224.00	224.00
CASH FROM OPERATIONS		5.92	811.60	844.60	881.60	923.60	969.60	969.60	969.60	969.60	969.60
PROCEEDS FROM 12% GOVT LOAN	2000.00										
LOAN PRINCIPAL REPAYMENTS		-246.00	-276.00	-310.00	-347.00	-388.00	-433.00				
ANNUAL PRE-TAX CASH FLOW	0.00	-934.48	535.60	534.60	534.60	535.60	536.60	969.60	969.60	969.60	1423.60
CUMULATIVE PRE-TAX CASH.FLOW	0.00	-934.48	-398.88	135.72	670.32	1205.92	1742.52	2712.12	3681.72	4651.32	6074.92
NET INCOME FOR TAX PURPOSES		-218.08	587.60	620.60	657.60	699.60	745.60	745.60	745.60	745.60	745.60
INCOME TAX 0% 1st 5YR, 50% 5+YRS		0.00	0.00	0.00	0.00	0.00	372.80	372.80	372.80	372.80	372.80
AT CASH FLOW W/O INTR & CAP PAYMTS		193.92	969.60	969.60	969.60	969.60	596.80	596.80	596.80	596.80	596.80
ANNUAL AFTER-TAX CASH FLOWS	0.00	-934.48	535.60	534.60	534.60	535.60	163.80	596.80	596.80	596.80	1050.80
CUMULATIVE AFTER-TAX CASH FLOW	0.00	-934.48	-398.88	135.72	670.32	1205.92	1369.72	1966.52	2563.32	3160.12	4210.92

DESCRIBE YOUR RESID. VAL. ASSUMP.: SALE OF WORKING CAPITAL AT COST

% PROFIT TO BE APPL. IN PROJ. YR	20.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
END OF PERIOD BALANCE ON LOAN	1754.00	1478.00	1168.00	821.00	433.00					
PROJECT ANNUAL SAVINGS	1609.10									
PROJECT COST OF SALES	639.50									

DEPRECIATION IS BASED ON 10 YEAR LIFE, STRAIGHT LINE.

NET PRESENT VALUE OF PLANT INCOME STREAM DISCOUNTED TO 15%, WITHOUT INTEREST AND PRINCIPLE PAYMENTS: 3570.38 M DALASI, 7056.32 M DALASI BEFORE DISCOUNTING.

CASH PAYBACK IS 3.6 YEARS PRE-TAX, AND AFTER TAX WITH 5 YEAR TAX HOLIDAY

ANNEX 3
Republic of the Gambia
Estimates of Recurrent Revenue and Expenditure
1986|87
With Estimates of
Development Expenditure
The Government Printer, Banjul, The Gambia

The following accounts were presented in the 1986/87 budget of the republic of the Gambia as actual expenditures for the year 1985/86. This is the basis of the costs used in the current government operation of the sawmill and the plantations.

Subhead 04 - Forestry Department - Details of Expenditure
--DALASI--

Item	Details of Expenditure	1985/86 Actuals Sawmill & Plantation	1985/86 Sawmill & Logging w/o Plantation	
010	Mill & Plant'n Salaries	129,989	74,705	
020	Allowances	14,007	14,007	(1)
171	Management & Protection of Plantation	40,000	0	
172	Preparation & Marketing of Forest Produce	68,500	24,393	(2)
210	Operation & Maintenance of Vehicles	7,500	7,500	(3)
220	Maintenance of Plant Machinery	25,000	25,000	
321	Purchase of Machinery	12,000	12,000	(4)
360	Construction of Building & Facilities	10,000	10,000	(5)
	Total	306,996	169,605	
	Amount Charged to Reforest & Plantation Maintenance		139,391	(6)

(1) Estimated to be 20% of the total by Mr. Bye Taal, Director of the Department of Forestry.
(2) Estimated by the writer to cover the cost of fuel for the sawmill.
(3) Estimated to by 15% of the total budget by Mr. Bye Taal.
(4) This includes new equipment as well as any spare parts.
(5) Estimated by Mr. Bye Taal, 50% used on the sawmill building.
(6) This amount is the difference between the total 1985/86 budget and the amount allocated to sawmill operation.

ANNEX 4

Nyambai Sawmill Detail Market Analysis

The following two pages show the detail market analysis of the Nyambai sawmill orders for the period July, August, September 1985. The analysis was done to determine the average market price, and the relative importance of lengths, widths, and thicknesses.

The analysis was done using Lotus 123. The results are summarized below:

Distribution by Thickness and Width

Thickness & Width Th x Wd	Item Percent	Cumulative Percent
2 X 4	22.3	22.3
2 X 9	17.5	39.8
2 X 8	15.6	55.4
2 X 7	13.6	69.0
1.5X 6	6.0	75.0
2 X 6	5.8	80.8
1 X 6	4.9	85.7

Distribution by Thickness

Thickness	Item Percent	Cumulative Percent
2 Inch	79.1	79.1
1 Inch	10.5	89.6
1.5 Inch	8.5	98.1
3 Inch	1.8	99.9

Distribution by Length

Lengths	Item Percent	Cumulative Percent
2.4 Meters	79.0	79.0
2.0 Meters	8.0	87.0
1.8 Meters	2.8	89.8
2.15 Meters	2.2	92.0
1.5 Meters	1.9	93.9

OCTOBER 29, 1986

LUMBER ANALYSIS SPREADSHEET

NYAMBAI GOVERNMENT SAWMILL OPERATION - ANALYSIS OF ORDERS

LUMBER PRICE SPREADSHEET INCHES, WIDTH, PIECES, LENGTH IN M, CALCULATED PRICE PER M3, TOTALS, PIECES BY RESPECTIVE LENGTH

THICK IN	WIDTH IN	M2	M3/LIN/M3	2.40	2.30	2.15	2.00	1.80	1.63	1.60	1.50	1.30	1.20	1.00	0.90	0.70	0.60	1.10	2.02	2.74	2.66	TOTAL M3	% M3	TOTAL LIN MET	PERCT LIN M	TOTAL BALANCE	PERCT BALANCE	BALANCE PER M3	BALANCE PER LIN	TOTAL PIECES	EQUIV METRIC DIMENSIONS %	PCS	THK MM	WID MM
2	I	3	0.003870	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	4	1	1			27.6	0.3	81.09	0.2	739.39	2.94	17	0.4	50.00	76.20	
LINEAL METERS				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	0.0	0.0	0.0	11.3	2.7	2.7													
CUBIC METERS				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.0	0.0	0.0	0.0	.0	.0	.0	0.1	0.2											
2	I	2	0.002580	248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			595.2	7.2	1166.39	2.2	739.50	1.96	248	6.4	50.00	50.80	
LINEAL METERS				595.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	3.2											
CUBIC METERS				1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0													
2	I	4	0.005161	837	6	34	10	0	0	0	0	0	7	11	8	0	0	0	0	0	0			2142.3	26.1	8357.82	23.2	739.50	3.92	913	23.6	50.00	101.60	
LINEAL METERS				2008.8	13.8	73.1	20.0	0.0	0.0	0.0	0.0	0.0	0.4	11.0	7.2	0.0	0.0	0.0	0.0	0.0	0.0	11.1	23.2											
CUBIC METERS				10.4	0.1	0.4	0.1	0.0	0.0	0.0	0.0	0.0	.0	0.1	.0	0.0	0.0	0.0	0.0	0.0	0.0													
2	I	6	0.007741	1	0	0	75	2	3	4	3	82	80	28	2	0	2	22	0	0	0			359.9	4.4	2116.27	5.8	739.50	5.88	245	6.3	50.00	152.40	
LINEAL METERS				2.4	0.0	0.0	152.0	3.6	4.9	6.7	4.5	106.6	24.0	28.0	1.6	0.0	1.2	24.2	0.0	0.0	0.0													
CUBIC METERS				.0	0.0	0.0	1.2	.0	.0	0.1	.0	0.0	0.2	0.2	.0	0.0	.0	0.2	0.0	0.0	0.0	2.0	5.8											
2	I	7	0.009032	300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			720.0	8.8	4939.20	13.6	739.50	6.86	300	7.8	50.00	177.80	
LINEAL METERS				720.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	13.6											
CUBIC METERS				6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0													
2	I	8	0.010322	300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			720.0	8.8	5644.80	15.6	739.50	7.84	300	7.8	50.00	203.20	
LINEAL METERS				720.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4	15.6											
CUBIC METERS				7.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0													
2	I	9	0.011612	300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			720.0	8.8	6350.40	17.5	739.50	8.82	300	7.8	50.00	228.60	
LINEAL METERS				720.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.4	17.5											
CUBIC METERS				8.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0													
3	I	3	0.005806	62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			148.8	1.8	636.21	1.8	739.50	4.41	62	1.6	76.20	76.20	
LINEAL METERS				148.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.8											
CUBIC METERS				0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0													
			LENGTH	2.40	2.30	2.15	2.00	1.80	1.63	1.60	1.50	1.30	1.20	1.00	0.90	0.70	0.60	1.10	2.02	2.74	2.66	M3	LINEAL METERS	BALANCE						PIECES	PCS	THK MM	WID MM
																								36227										
TOTAL BALANCE																														3062	TOTAL BALANCE TOTAL PIECES			
TOTAL PIECES				2398	42	109	606	127	3	4	187	82	46	205	71	12	2	22	4	1	1			8211.04							TOTAL LINEAL METERS			
TOTAL LINEAL METERS				5755.2	96.6	234.3	1212	228.6	4.89	6.72	280.5	106.6	55.2	205	63.9	8.4	1.2	24.2	11.08	2.74	2.66										TOTAL CUBIC METERS			
TOTAL CUBIC METERS				37.68	0.55	1.05	3.79	1.32	0.04	0.05	0.91	0.83	0.24	0.59	0.34	0.03	0.01	0.19	0.04	0.01	0.01	47.7												
			LENGTH	2.40	2.30	2.15	2.00	1.80	1.63	1.60	1.50	1.30	1.20	1.00	0.90	0.70	0.60	1.10	2.02	2.74	2.66	M3	LINEAL METERS	BALANCE						PIECES	PCS	THK MM	WID MM
PERCENT OF PIECES BY LENGTH				62.09	1.09	2.82	15.69	3.29	0.08	0.10	3.29	2.12	1.19	5.31	1.84	0.31	0.05	0.57	0.10	0.03	0.03										% OF PIECES BY LENGTH			
PERCENT OF LINEAL METERS BY LENGTH				70.09	1.18	2.85	14.76	2.78	0.06	0.08	2.32	1.30	0.67	2.50	0.78	0.10	0.01	0.23	0.14	0.03	0.04										% OF LIN M BY LENGTH			
PERCENT OF CUBIC METERS BY LENGTH				79.00	1.16	2.20	7.95	2.76	0.08	0.11	1.92	1.73	0.51	1.24	0.72	0.07	0.02	0.39	0.09	0.02	0.03										% OF CUBIC M BY LENGTH			

NYAMBAI SAWMILL DETAIL MARKET ANALYSIS WORKSHEET

LUMBER ANALYSIS SPREADSHEET

NYAMBAI GOVERNMENT SAWMILL OPERATION - ANALYSIS OF ORDERS

OCTOBER 29, 1986

LUMBER PRICE SPREADSHEET PIECES, WIDTH, PIECES, LENGTH IN M, CALCULATED PRICE PER M3, TOTALS,

THICK IN	WIDTH IN	M2	M3/LM/M3	PIECES BY RESPECTIVE LENGTH 2.40	2.30	2.15	2.00	1.80	1.63	1.60	1.50	1.30	1.20	1.00	0.90	0.70	0.60	1.10	2.02	2.74	3.66	TOTAL M3	$ M3	TOTAL LIN MET	PERCT LIN M	TOTAL DRLABS	PERCT DRLABS	DRLABS PER M3	DRLABS PER LM	TOTAL PIECES	$ PCS	GRAV METRIC DIMENSIONS THK	WDTH	LGTH
0.5	1	2 0.000645	0.49	123	0	0	0	2	0	0	0	0	19	0	2	0	0	0	0	0	0													
LINEAL METERS				253.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0	22.8	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0			321.4	2.9	158.47	0.4	759.59	0.49	146	2.0	12.70	30.00
CUBIC METERS				0.2	0.0	0.0	0.0	.0	0.0	0.0	0.0	0.0	.0	0.0	.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4											
1	2	1 0.000645		0	0	0	6	0	0	0	0	0	0	3	0	0	0	0	0	0	0													
LINEAL METERS				0.0	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			12.0	0.2	7.33	.0	759.59	0.49	9	0.2	25.40	25.40
CUBIC METERS				0.0	0.0	0.0	.0	0.0	0.0	0.0	0.0	0.0	0.0	.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.0	.0											
1	2	3 0.000825		69	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0													
LINEAL METERS				165.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			165.6	2.0	468.72	1.1	759.59	2.83	69	1.0	25.40	127.00
CUBIC METERS				0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.1											
1	2	2 0.001290		0	0	0	128	0	0	0	0	0	0	0	6	0	0	0	0	0	0													
LINEAL METERS				0.0	0.0	0.0	256.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			256.0	3.1	250.00	0.7	759.59	0.98	128	3.3	25.40	50.80
CUBIC METERS				0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7											
1	2	3 0.001935		0	0	0	0	0	9	0	22	0	0	163	0	0	0	0	0	0	0													
LINEAL METERS				0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.5	0.0	0.0	163.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			197.5	2.4	298.33	0.8	759.59	1.47	185	4.0	25.40	76.00
CUBIC METERS				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.8											
1	2	6 0.003870		62	0	63	145	0	0	0	23	0	0	0	0	0	0	0	0	0	0													
LINEAL METERS				148.8	0.0	135.5	290.0	0.0	0.0	0.0	34.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			608.8	7.4	1789.73	4.9	759.59	2.94	253	7.6	25.40	152.40
CUBIC METERS				0.6	0.0	0.5	1.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	4.9											
1	2	8 0.005161		0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
LINEAL METERS				0.0	0.0	0.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			30.0	0.4	117.30	0.3	759.59	3.92	15	0.4	25.40	203.20
CUBIC METERS				0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3											
1	4	9 0.005806		79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
LINEAL METERS				189.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			189.6	2.3	838.14	2.3	759.59	4.41	79	2.0	25.40	228.60
CUBIC METERS				1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	2.3											
1.5	2	2 0.001935		0	0	0	220	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
LINEAL METERS				0.0	0.0	0.0	440.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			440.0	5.4	646.00	1.8	759.59	1.47	220	5.7	38.10	50.80
CUBIC METERS				0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.0											
1.5	2	4 0.003870		0	0	0	6	0	0	0	0	0	0	0	0	12	0	0	0	0	0													
LINEAL METERS				0.0	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			24.0	0.2	59.50	0.2	759.59	2.94	10	0.3	38.10	101.60
CUBIC METERS				0.0	0.0	0.0	.0	0.0	0.0	0.0	0.0	0.0	0.0	.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2											
1.5	2	5 0.004838		17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
LINEAL METERS				40.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			40.8	0.5	149.55	0.4	759.59	3.66	17	0.4	38.10	127.00
CUBIC METERS				0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4											
1.5	4	6 0.005806		0	36	12	0	123	0	0	78	0	0	0	48	0	0	0	0	0	0													
LINEAL METERS				0.0	82.8	25.8	0.0	221.4	0.0	0.0	117.0	0.0	0.0	0.0	43.2	0.0	0.0	0.0	0.0	0.0	0.0			490.2	6.0	2161.78	6.0	759.59	4.41	297	7.7	38.10	152.40
CUBIC METERS				0.0	0.5	0.1	0.0	1.3	0.0	0.0	0.7	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	2.8	6.0											

LUMBER ANALYSIS SPREADSHEET

NYAMBAI GOVERNMENT SAWMILL OPERATION - ANALYSIS OF ORDERS

OCTOBER 29, 1986

LUMBER PRICE SPREADSHEET INCHES, WIDTH, PIECES, LENGTH IN M, CALCULATED PRICE PER M3, TOTALS,

THICK IN	WIDTH IN	M2	BDFT/M3	PIECES BY RESPECTIVE LENGTH 2.40	2.30	2.15	2.00	1.80	1.63	1.60	1.50	1.30	1.20	1.00	0.90	0.70	0.60	1.10	2.02	2.74	3.66	TOTAL M3	% M3	TOTAL LIN METERS	REJECT LIN M	TOTAL BDFT	REJECT BDFT	BDFT/M3	BDFT/LIN	TOTAL PIECES	% PCS	CUBIC M	MBF
2	1	3 0.041870		0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	4	1	1													
LINEAR METERS				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.0	0.0	0.0	11.3	2.7	3.7			27.6	0.3	21.09	0.2	759.50	2.94	17	0.4	50.00	76.00
CUBIC METERS				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.0	0.0	0.0	0.0	.0	.0	.0	0.1	0.2											
2	1	2 0.082500		242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
LINEAR METERS				580.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			580.8	7.2	1166.59	3.2	759.50	1.95	242	6.4	50.00	58.00
CUBIC METERS				1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	3.2											
2	1	4 0.165161		637	6	24	10	0	0	0	0	0	7	11	8	0	0	0	0	0	0													
LINEAR METERS				2040.0	13.8	72.1	20.0	0.0	0.0	0.0	0.0	0.0	8.4	11.0	7.2	0.0	0.0	0.0	0.0	0.0	0.0			2142.3	26.1	6297.02	23.2	759.50	2.92	912	23.6	50.00	104.00
CUBIC METERS				14.4	0.1	0.4	0.1	0.0	0.0	0.0	0.0	0.0	.0	0.1	.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1	23.2											
2	1	5 0.097741		1	0	0	76	2	3	4	3	82	20	28	2	0	2	22	0	0	0													
LINEAR METERS				2.4	0.0	0.0	152.0	3.6	4.9	6.7	4.5	106.6	26.0	28.0	1.8	0.0	1.2	24.2	0.0	0.0	0.0			359.9	4.4	2116.27	5.8	759.50	5.88	245	6.3	50.00	152.40
CUBIC METERS				.0	0.0	0.0	1.2	.0	.0	0.1	.0	0.8	0.2	0.2	.0	0.0	.0	0.2	0.0	0.0	0.0	2.0	5.0											
2	1	7 0.097732		200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
LINEAR METERS				720.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			720.0	0.0	4535.20	13.6	759.50	6.05	200	7.0	50.00	177.00
CUBIC METERS				6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	13.6											
2	1	8 0.014322		200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
LINEAR METERS				720.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			720.0	0.0	5544.00	15.6	759.50	7.04	200	7.0	50.00	203.00
CUBIC METERS				7.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4	15.6											
2	1	9 0.011612		200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
LINEAR METERS				720.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			720.0	0.0	6300.40	17.5	759.50	8.02	200	7.0	50.00	200.00
CUBIC METERS				8.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.4	17.5											
3	1	3 0.085806		62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
LINEAR METERS				148.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			148.8	1.0	655.21	1.0	759.50	4.41	62	1.6	76.00	76.00
CUBIC METERS				0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.0											
			LENGTH	2.40	2.30	2.15	2.00	1.80	1.63	1.60	1.50	1.30	1.20	1.00	0.90	0.70	0.60	1.10	2.02	2.74	3.66	M3	LINEAR METERS			BDFT				PIECES	PCS	CUBIC M	MBF
TOTAL BDFT																										35827						TOTAL BDFT	
TOTAL PIECES				2398	42	109	666	127	3	4	127	82	46	245	71	12	2	22	4	1	1									3662		TOTAL PIECES	
TOTAL LINEAR METERS				5735.2	96.6	234.3	1212	228.6	4.89	6.72	190.5	106.6	55.2	245	63.9	8.4	1.2	24.2	11.00	2.74	3.66			8211.04								TOTAL LINEAR METERS	
TOTAL CUBIC METERS				37.60	0.55	1.05	3.79	1.32	0.04	0.05	0.91	0.83	0.24	0.59	0.34	0.03	0.01	0.19	0.04	0.01	0.01	47.7										TOTAL CUBIC METERS	
			LENGTH	2.40	2.30	2.15	2.00	1.80	1.63	1.60	1.50	1.30	1.20	1.00	0.90	0.70	0.60	1.10	2.02	2.74	3.66	M3	LINEAR METERS			BDFT				PIECES	PCS	CUBIC M	MBF
PERCENT OF PIECES BY LENGTH				62.09	1.09	2.82	15.69	3.29	0.08	0.14	3.29	2.12	1.19	5.31	1.84	0.31	0.05	0.57	0.10	0.03	0.03											% OF PIECES BY LENGTH	
PERCENT OF LINEAR METERS BY LENGTH				70.09	1.18	2.85	14.76	2.78	0.06	0.08	2.32	1.30	0.67	2.98	0.78	0.10	0.01	0.29	0.14	0.03	0.04											% OF LIN M BY LENGTH	
PERCENT OF CUBIC METERS BY LENGTH				79.00	1.16	2.20	7.95	2.76	0.08	0.11	1.92	1.73	0.51	1.24	0.72	0.07	0.02	0.39	0.09	0.02	0.03											% OF CUBIC M BY LENGTH	

LUMBER ANALYSIS SPREADSHEET — NYAMBAI GOVERNMENT SAWMILL OPERATION - ANALYSIS OF ORDERS — OCTOBER 29, 1986

LUMBER PRICE SPREADSHEET INCHES, WIDTH, PIECES, LENGTH IN M, CALCULATED PRICE PER M3, TOTALS,

THICK IN	WIDTH IN	M3	CD/LBS/M3	PIECES BY RESPECTIVE LENGTH 2.40	2.30	2.15	2.00	1.80	1.63	1.63	1.50	1.30	1.20	1.00	0.90	0.70	0.60	1.10	2.02	2.74	3.66	TOTAL M3	% M3	TOTAL LIN MET	PERCT LIN M	TOTAL BALANCE	PERCT BALANCE	BALANCE PER M3	BALANCE PER LIN	TOTAL PIECES	% PCS	GRAV METRIC DIMENSIONS THK MM	WID MM
0.5	I	2 0.000643	0.49	123	0	0	0	2	0	0	0	0	19	0	2	0	0	0	0	0	0			321.4	3.9	158.47	0.4	739.50	0.49	146	3.8	12.70	50.80
LINEAL METERS				295.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0	22.8	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0												
CUBIC METERS				0.2	0.0	0.0	0.0	.0	0.0	0.0	0.0	0.0	.0	0.0	.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4										
1	I	1 0.000645		0	0	0	6	0	0	0	0	0	0	3	0	0	0	0	0	0	0			15.0	0.2	7.35	.0	739.50	0.49	9	0.2	25.40	25.40
LINEAL METERS				0.0	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0												
CUBIC METERS				0.0	0.0	0.0	.0	0.0	0.0	0.0	0.0	0.0	0.0	.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.0	.0										
1	I	3 0.003295		69	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0			165.6	2.0	405.72	1.1	739.50	2.45	69	1.0	25.40	127.00
LINEAL METERS				165.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0												
CUBIC METERS				0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.1										
1	I	2 0.001290		0	0	0	128	0	0	0	0	0	0	0	0	0	0	0	0	0	0			256.0	3.1	258.00	0.7	739.50	0.98	128	3.3	25.40	50.80
LINEAL METERS				0.0	0.0	0.0	256.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0												
CUBIC METERS				0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7										
1	I	3 0.001935		0	0	0	0	0	0	0	23	0	0	163	0	0	0	0	0	0	0			197.5	2.4	299.33	0.8	739.50	1.47	186	4.8	25.40	76.20
LINEAL METERS				0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.5	0.0	0.0	163.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0												
CUBIC METERS				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.8										
1	I	5 0.003870		62	0	63	145	0	0	0	23	0	0	0	0	0	0	0	0	0	0			640.8	7.4	1789.73	4.9	739.50	2.94	293	7.6	25.40	152.40
LINEAL METERS				148.8	0.0	135.5	290.0	0.0	0.0	0.0	34.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0												
CUBIC METERS				0.6	0.0	0.5	1.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	4.9										
1	I	8 0.005161		0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0			30.0	0.4	117.60	0.3	739.50	3.92	15	0.4	25.40	203.20
LINEAL METERS				0.0	0.0	0.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0												
CUBIC METERS				0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3										
1	I	9 0.005806		79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			189.6	2.3	836.14	2.3	739.50	4.41	79	2.0	25.40	228.60
LINEAL METERS				189.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0												
CUBIC METERS				1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	2.3										
1.5	I	2 0.001935		0	0	0	220	0	0	0	0	0	0	0	0	0	0	0	0	0	0			440.0	5.4	646.80	1.8	739.50	1.47	220	5.7	38.10	50.80
LINEAL METERS				0.0	0.0	0.0	440.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0												
CUBIC METERS				0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.8										
1.5	I	4 0.003870		0	0	0	6	0	0	0	0	0	0	0	0	12	0	0	0	0	0			20.4	0.2	59.98	0.2	739.50	2.94	18	0.5	38.10	101.60
LINEAL METERS				0.0	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0												
CUBIC METERS				0.0	0.0	0.0	.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2										
1.5	I	5 0.004838		17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			40.8	0.5	149.94	0.4	739.50	3.68	17	0.4	38.10	127.00
LINEAL METERS				40.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0												
CUBIC METERS				0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4										
1.5	I	6 0.005806		0	36	12	0	123	0	0	78	0	0	0	48	0	0	0	0	0	0			450.2	6.0	2161.78	6.0	739.50	4.41	237	7.7	38.10	152.40
LINEAL METERS				0.0	82.8	25.8	0.0	221.4	0.0	0.0	117.0	0.0	0.0	0.0	43.2	0.0	0.0	0.0	0.0	0.0	0.0												
CUBIC METERS				0.0	0.5	0.1	0.0	1.3	0.0	0.0	0.7	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	2.8	6.0										

ANNEX 5

ESTIMATED COST OF PROPOSED TECHNICAL ASSISTANCE PROGRAM

Nyambai Sawmill Privatization Proposed Budget for Follow On Technical Assistance	Cost Details	Summary of Costs
Total direct labor 70 days @ 266.00	18,620	18,620
Indirect at 92 percent	17,130	17,130
Subtotal Direct & Indirect Labor	35,750	35,750
Direct Item Costs		
DAB=Direct Labor,18,291 x .0267	488	
Ground Transportation	3,000	
Report & Secretarial	1,500	
Visas & Medical	300	
Communications	750	
Subtotal Direct Cost	6,038	
Contingency @ 20%	1,208	
Total Direct Item Costs	7,246	7,246
Subtotal Labor, OH, Direct		42,996
Fee at 10%	4,300	4,300
Level of Effort		47,296
Travel		
6 Return Air Fares Via Europe @ 2,300	13,800	
3 Return Air Fares USA @ 500	1,500	
Total Travel	15,300	15,300
Per Diem		
Banjul 48 @ 57	2,736	
London 12 @ 140	1,680	
Washington 11 @ 112	1,232	
ITS 5 @ 6	30	
Total Per Diem	5,678	5,678
Grand Total		68,274

ANNEX 6

LIST OF CONTACTS

U. S. EMBASSY & USAID MISSION, BANJUL

The Honorable Mr. Horowitz, United States Ambassador
Mr. Byron Bahl, USAID Mission Director
Mr. Barry Burnett, USAID Washington
Mr. Tom Herlehy, USAID Program Analyst
Mr. Tom Hopgood, USAID Asst Agricultural Attache
Mr. Scihou Jobe, USAID Agricultural Assistant
Ms. Julia M. MORRIS, USAID Personal Services Contractor, Forestry Project

REPUBLIC OF THE GAMBIA

Mr. Saihou Njai, Acting Secretary General
Mr. A. K. Njai, Permanent Secretary to the Vice President

NATIONAL INVESTMENT BOARD

Mr. Touray, Financial Comptroller
Mr. Bye Malleh Wadda, Corps Specialist

DEPARTMENT OF FORESTRY

Mr. Bye Taal, Director, Department of Forestry
Mr. Sidi Beh, Manager, Myambia Sawmill
Mr. Aboulou Camara, Assistant Manager Myambia Sawmill

TRADE DIVISION, MINISTRY OF FINANCE

Mr. Mustaph Ngum, Customs Department
Mr. A. K. Barr, Customs Department
Mr. Nicholas, Customs Statistics
Mr. Tunkara, Central Gambia Statistics Department

CARPENTRY SHOP

Mr. Melvin Guswell, Senior Workshop Superintendent

GAMBIA UTILITIES COMMISSION (GUC)

Mr. Kabbajallow, Credit Controller, Gambia Utilities Commission

GAMBIAN-GERMAN FORESTRY DEVELOPMENT PROJECT

Mr. Eberhard Gotz, Wood Technologist, Sawmill Engineer
Mr. Wolfgang Thoma, Forester

GREAT BRITAIN VSO VOLUNTEERS

Clive Stewart, Forestry Volunteer
Carolyn, Downey, Forestry Volunteer

ANNEX 6

LIST OF CONTACTS (Continued)

LOCAL PRIVATE INDUSTRY

Mr. Mama Difa, Furniture Builder
Mr. Alexander Beck, Project Manager, Sobea Construction Corp
Mr. Durand, Assistant Chairman, CFAO
Mr. Nadara, Building Contractor
Mr. Laidy Tayif Sowe, Lumber Importer, Broker
Mr. Dodon Secka, Secken Enterprizes & Co
Mr. Cameron Nigel, Standard Charter Bank
Mr. Secka, Owner, Chan & Secka
Mr. Saibo Tumkara, Owner, Apollo Wood Supply
Mr. Colin Anderson, Asst. to the Area Manager, Kier Construction
Mr. Nassif Jacobs, Owner, Atom Construction Company
Mr. Tang Gouji, Manager, China State Construction Engineering Co.
Mr. Lamin Jobarteh, Gambia Development and Credit Bank

ANNEX 7

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