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Report No. 6427-UG

STAFF APPRAISAL REPORT

UGANDA

FORESTRY REHABILITATION PROJECT

May 27, 1987

Eastern & Southern Africa Region
Northern Agriculture Division

CURRENCY EQUIVALENTS

Exchange Rate: U Sh 1,400 = US$1 (At Appraisal - June 1986)
U Sh 6,000 = US$1 (At Negotiations - May 1987)[1/]

WEIGHTS AND MEASURES
(Metric System)

Fuelwood conversion factors:

1 ton of fuelwood = 1.43 m^3 (solid) of fuelwood
1 stere (stacked m^3) of fuelwood = 0.6 m^3 (solid) of fuelwood

ABBREVIATIONS AND ACRONYMS

ACFO	Assistant Chief Forest Officer
ARDC	Agroforestry Research and Demonstration Center
CFO	Chief Forest Officer
CIDA	Canadian International Development Agency
DANIDA	Danish International Development Agency
DCFO	Deputy Chief Forest Officer
DFO	District Forest Officer
ED	Energy Department
EEC	European Economic Community
ESMAP	Energy Sector Management Assistance Program
FD	Forestry Department
FO	Forest Officer
GOU	Government of Uganda
ICO	International Coffee Agreement
ILO	International Labour Organization
IWEFPP	Integrated Wood Energy Farming Pilot Project
KfW	Kreditanstalt fur Wiederaufbau (W. Germany)
MAF	Ministry of Agriculture and Forestry
MPED	Ministry of Planning and Economic Development
NFC	Nyabyeya Forest College
NGO	Non-Government Organization
ODA	Overseas Development Administration (UK)
Oxfam	Oxford Committee for Famine Relief
PF-WP	Project File - Working Paper
PIT	Project Implementation Team
SAWP	Staff Appraisal Working Paper
SDA	Special District Administration
SRO	Senior Research Officer
UNDP	United Nations Development Program
UNEP	United Nations Energy Program
USAID	United States Agency for International Development
VSO	Voluntary Service Overseas
WFP	World Food Program
WICO	Wood Industries Corporation
WPA	Working Plan Areas

FISCAL YEAR

July 1 - June 30

1/ Following currency reform announced in May 1987, 100 units of local currency (old U Sh) as expressed in the SAR are equivalent to 1 unit of local currency (New U Sh).

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FORESTRY REHABILITATION PROJECT

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This report is based on the findings of an appraisal mission to Uganda in July, 1986. The mission members included M. Bromhead, R.D.H. Rowe, C. Cornelius (IDA); I. McLean, P. Ryan (IDA Consultants); G. Foley and D. Earl (EEC Consultants).

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UGANDA

FORESTRY REHABILITATION PROJECT

Credit and Project Summary

Borrower: Government of Uganda

Amount: US$13.0 million

Terms: IDA Terms

Project Description: Project objectives are: (i) to increase the production of woodfuels and poles for the urban population through encouraging private wood farming in peri-urban areas and managed production of charcoal in natural forests; (ii) to increase the production of wood products for the rural population and conserve soil fertility through encouraging farmers to plant multi-purpose tree species; (iii) to manage and conserve Uganda's natural forests for sustained timber and charcoal production by the private sector, for revenue collection from logging, for environmental protection and for nature conservation; (iv) to increase the productivity of the softwood plantations for sustained timber production by the private sector; (v) to provide logistical and institutional support to the Forestry Department for achievement of the above objectives and to create the information and management base for long term planning, development and conservation of Uganda's forest resources.

Project components are: (i) Peri-urban plantations and pilot wood farms: direct establishment of 900 ha of eucalyptus plantations for demonstration purposes; provision of seedlings for establishment by private farmers of 1,000 ha for production of fuelwood and poles on a pilot basis; (ii) Farm forestry: establishment of nurseries in rural areas for production of 27 million seedlings annually by year 6 of multi-purpose species to be planted by farmers and non-government agencies; extension, farmer training and agroforestry demonstration; (iii) Natural forest management rehabilitation: redemarcation of 1,350 kms of forest boundaries, encroachment and enrichment planting of 26,000 ha, extension for improved charcoal production, improved logging managment and revenue collection, management and biomass inventory, including working plans for selected natural high forest and plantation areas, expansion of nature conservation areas from 5% to 20% of natural forest area and managed as such, and protected areas with only limited logging to cover an additional 30%; (iv) Softwood plantation rehabilitation: rehabilitation of 13,900 ha of softwood plantations and re-establishment of fire-protection systems; (v) Rehabilitation of the Forestry Department: rehabilitation of offices and accommodation, provision of

transport and forestry equipment for supervision of forest activities, technical assistance for planning, procurement and financial management, and studies; and (vi) Training: rehabilitation of Nyabyeya Forest College to provide in-service training; rehabilitation of Nakawa sawmill to provide training in mill and logging operations; limited study tours.

Benefits and Risks: Benefits include increased production of (i) fuelwood and poles in both peri-urban and rural areas; (ii) timber from both natural forests and softwood plantations; and (iii) fodder and fruit in rural areas; protection of unique flora and fauna in natural forests; conservation of the forest resource base and protection of the environment; and more efficient utilization of wood; and easier access to wood production for consumers. Risks include: delay in project implementation due to weak implementation capacity, lack of donor coordination and failure of GOU to allot forestry revenues to meet requirements to sustain project activities beyond the project period. The project minimizes these risks by strengthening the Forestry Department through provision of equipment, operating costs, housing, technical assistance and in-service training, by establishing project coordination and monitoring arrangements with adequate donor involvement. It would also secure substantial increases in forestry revenues above incremental operating costs that would assist GOU to meet its obligations to sustain project activities. The project is robust in regard to technical risks and relative to other productive projects, less vulnerable to the constraints inherent in the current macro-economic environment. Security is not a major risk as the planting activities are not located in areas experiencing extensive civil war.

	Local	Foreign	Total
	(US$ million)		
Estimated Costs			
1. Energy Farming	0.2	0.6	0.8
2. Farm Forestry	1.9	4.9	6.8
3. Natural Forest Management Rehabilitation	1.4	4.2	5.6
4. Industrial Softwood Plantation Rehabilitation	0.4	1.4	1.8
5. Forest Department Rehabilitation	1.2	6.4	7.6
6. Training	.6	1.5	2.1
Total Base Cost	5.7	19.0	24.7
Physical Contingencies	0.5	1.4	1.9
Price Contingencies	5.4	1.3	6.7
Total Project Costs 1/	11.6 2/	21.7	33.3
Financing Plan			
IDA	2.8	10.2	13.0
EEC	2.0	5.0	7.0
DANIDA	2.0	5.5	7.5
UNDP	1.4	0.8	2.2
CARE	-	0.2	0.2
Government of Uganda	3.4	-	3.4
Total Financing	11.6	21.7	33.3

Estimated Disbursement from IDA Credit (US$ Million)

IDA FY	88	89	90	91	92	93	94	95
Annual	0.4	1.7	2.3	2.7	2.5	2.0	1.1	0.3
Cumulative	0.4	2.1	4.4	7.1	9.6	11.6	12.7	13.0

Economic Rate of Return: 15%
Staff Appraisal Report No. 6427-UG
IBRD Map No. 20050

1/ Includes US$1.25 million financed under a PPF.
2/ Includes US$0.4 million in taxes and duties and total project cost net of taxes and duties is US$32.9 million.

UGANDA

FORESTRY REHABILITATION PROJECT

I. COUNTRY AND PROJECT BACKGROUND

A. Geography and Economy

Geography

1.01 Uganda has a population of approximately 14.7 M, over 90% of which is rural. It covers an area of approximately 241,000 sq. km. of which 45,000 sq. km. is covered by water. The geography of the country is physically diverse, characterized by a central plateau region, numerous waterways and lakes, and three mountainous areas: the Ruwenzori Mountains in the west rising to 5,000 m, Mount Elgon in the east, and the hilly Kigezi region in the southwest. Lakes Victoria, Edward, George, Albert and Kyoga are the main surface water resources, and these are fed by watershed areas stretching into neighboring countries. The natural forests, which cover the mountain ranges, play a vital role in regulating stream flow and protecting the soil.

1.02 Because of altitude (80% of Uganda is between 1,000 and 1,500 m), the climate is mild, and temperatures vary between a mean minimum of 17°C and a mean maximum of 32°C over much of the country. There is little seasonal variation. Average annual rainfall varies from 510 mm to 2,160 mm, but, except for extreme northeast and northwest, is adequate for many agricultural crops. Soils in general are of reasonable to good fertility. In the south, rainfall is bimodal, with peaks in April to May and September to November. Moving north, the bimodal patterns become less distinct and merge into a single rainy season.

1.03 Administratively, Uganda is divided into 33 districts. The district is the primary administrative unit for development and, until recently, was administered by the District Commissioner (DC), who was a senior civil servant. Districts are now headed by direct political appointees known as District Administrators (DAs), and DCs have been renamed Senior Executive Secretaries.

1.04 Uganda is landlocked. Road and rail links to Mombasa in Kenya (1,100 km.from the Ugandan border) are reasonable though in need of rehabilitation. An alternative link across Lake Victoria to the railhead at Mwanza in Tanzania is operating, though not very effectively. The distance to the sea both acts as a barrier to exports of items which Uganda can produce at low cost (e.g. timber, grains), and affords protection for domestic production of goods which could otherwise be imported (e.g. sugar, cement and, potentially, paper products).

Political Developments and the Economy

1.05 By the end of the 1960s, Uganda had one of the strongest economies in Africa. Infrastructure, health and education systems were well developed, there was a flourishing food and export crop sector, and a growing industrial sector. Financial management was sound, and GDP growth steady.

1.06 After political unrest, Uganda came under military rule in 1971. Most industries were expropriated or nationalized and, under inept management, rapidly declined. In the forestry sector, for example, sawmills, of which there were 30, were nationalized and grouped under a parastatal, the Wood Industries Corporation (WICO). Production declined from about 150,000 m^3 of sawn timber in 1970 to 10-15% of this level in 1980. Macroeconomic management was poor, with growing budgetary and balance of payments deficits and foreign exchange scarcities. Political repression increased, and there was a reversion to subsistence agriculture as the market economy deteriorated.

1.07 In the unrest surrounding the removal of the dictatorship in 1979, there was much looting and destruction of infrastructure, and for a time little direction in the economy. Macroeconomic management and economic performance improved in the 1981-84 period, with successive devaluations and floating of the exchange rate, removal of price controls and a policy of returning nationalized industries to their previous owners. The Wood Industry Corporation (WICO) was abolished, and sawmillers gradually took up their old concessions. However, political unrest continued, with bloodshed and acts of violence by the poorly disciplined armed forces. Financial and budgetary management deteriorated from 1984, inflation increased and there were increasing foreign exchange controls. A coup in July 1985 was followed by an unsettled period. Attempts to secure a coalition failed between the new government and representatives of the National Resistance Army (NRA), which had been the main resistance force in the early 1980's. The NRA finally took control of the government in January 1986. Since then, there has been a remarkable improvement in security and law and order.

1.08 Throughout 1986, inflation was very high. Output remained constrained by poor infrastructure and shortages of imported inputs and spare parts, while monetization of the budgetary deficit led to a doubling of the money supply. By December 1986, the 12-month inflation rate recorded 175 percent. After a brief return to a dual exchange market rate between June and August 1986, the exchange rate was unified in late August 1986 at U Sh 1,400 per one US dollar, the level prevailing at end-1985. As a result, the real exchange rate in 1986 appreciated by 175 percent. In late 1986, conscious of the need to re-establish financial stability and accelerate the rehabilitation of the economy, the Ugandan authorities decided to prepare a comprehensive three-year program of economic rehabilitation and development. The program aims at achieving a rapid overall economic recovery and setting the base for sustained economic development through diversification of exports, promotion of efficient import substitution activities, and better utilization of domestic resources. The Government has announced, on May 15, 1987, a new economic policy package in line with the Policy Framework Paper (PFP) agreed with

the Bank and IMF in March 1987. These policy measures include: currency reform; setting a realistic exchange rate; substantially increasing agriculture producer prices; and pricing of petroleum products coupled with doubling of civil servants' salaries.

B. The Agricultural Sector

1.09 Uganda's economy is essentially agrarian. Agriculture provides the livelihood of over 90% of the population. It accounts for over half of GDP and 99% of merchandise exports. Exports now consist almost entirely of coffee, which totalled 140,000 tons in 1986, or 87.5% of the country's quota. This is less than in the late 1960s when cotton, tea, hides and skins, tobacco and some sugar and wood products were also exported. Food crops (bananas, plantains, cassava, sweet potato, finger millet, sorghum, maize, beans and groundnuts) dominate the cropping pattern at present. Except in the north where ox-cultivation is widespread, cultivation is largely by hoe, and inputs (fertilizer and pesticides) are rarely used. Considering the low input technology, yields are reasonable. This reflects Uganda's long tradition of settled smallholder agriculture and generally favorable growing conditions. The country is self-sufficient in food production except for wheat and (at present) sugar and cooking oils. It has substantial comparative advantage for production of food crops for export to neighboring countries; however, the prevailing unfavorable commodity price prospects for grains are likely to make it difficult for Uganda to compete even for regional export markets in the near future.

1.10 Livestock plays a key role in the economy, particularly in the west and northeast. Livestock numbers have declined since the mid-1970s, both from looting and slaughter, and from re-emergence of major animal diseases following deterioration in control measures. The fisheries subsector is equally important as livestock by providing about 50% of domestic animal protein requirements.

C. The Forestry Subsector

Natural Forest Reserves

1.11 The gazetted forest reserve comprises 7% of the dryland area (194,000 sq. km.) of Uganda, distributed as follows:

Tropical high forests	700,000 ha	540,000 ha under production 160,000 ha protection area
Savannah forests	632,000 ha	
Plantations	24,300 ha	10,900 ha peri-urban 1/ 13,400 ha softwoods

1/ There are in addition, approximately 7,200 ha and 490 ha of fuelwood plantations for tobacco and tea processing respectively, but these are outside the control of the Forestry Department.

Tropical High Forests

1.12 The tropical high forests are concentrated in Western Uganda around Lake Victoria and on Mount Elgon in the east. They include rare flora and fauna plus animals in danger of extinction, and unique ecological systems. There is a wide variety of tree species including highly valued species such as mahoganies, Chlorophora, Lovoa and Elgon olive. Through the 1950s and 1960s, a relatively advanced system of management was developed by the Forestry Department (FD) for Uganda's natural high forests, with a well-controlled system of workplans and logging followed by refinement for charcoal burning and enrichment planting. Training in milling operations was provided at the wood utilization center at Nakawa in Kampala. In the past, the forests contributed substantially to Uganda's tourist industry, which earned over US$20 million in foreign exchange in the early 1970s. Forest products contributed to public revenues through royalty collections and sales taxes.

1.13 Since the 1970s, as resources available to the FD declined and sawmill management deteriorated, the system of management has broken down. Millers have felled immature trees, and inappropriate logging and extraction equipment have badly degraded the forest environment, damaging wildlife habitats and retarding natural regeneration. Wildlife have also been slaughtered indiscriminately as nature reserves have not been respected. As the training facility at Nakawa has deteriorated, sawmilling skills have declined and there is substantial waste of wood in logging and milling operations. The timber resources have been further degraded by uncontrolled pitsawing, with "creaming" of the best forest trees leading to impoverished stands, and unlicensed burning for charcoal of valuable timber trees including mahoganies. Boundaries have not been maintained, and there has been serious encroachment by agriculturalists (though little permanent settlement), especially in Mount Elgon, Mabira and Semliki forests. More recently, as mills have been returned to their owners and new concessions have been granted, there has been little or no link between milling capacity, the size of the concession allocated and sustainable yield of the resource. Available wood resources can only be guessed at, with the most recent inventory dating from the early 1960s. Working plans exist for none of the forests. There is an urgent need to reintroduce an organized system of management based on sound knowledge of the resource base and its dynamics, to re-establish boundaries, prepare workplans, control logging operations and re-establish and respect nature reserves.

Savannah Forests

1.14 The Savannah forest reserves are widely scattered but concentrated in the north and east of the country. Here too, there has been uncontrolled cutting of species, often before they reach maturity, and degradation of the resource base.

Softwood Plantations

1.15 The softwood plantations were first planted in the late 1940s, and the most recent was planted in the mid-1970s. The long term objective was to increase the timber resources of Uganda, but also provide a base for a pulp and paper industry. Plantations, which total 13,400 ha, are

comprised mostly of cypress (Cupressus lusitanica) and pine (Pinus patula, P. radiata, P. caribea, and a small area of P. oocarpa). They are located mostly in the west but also in the center of the country. Over the past 15 years, protection, management and maintenance has virtually ceased, and this has led to a deterioration of the quality and incremental yields of the standing stock. Since these trees reached maturity after 1971, the plantations have never been exploited on a commercial basis. The plantations now represent a substantially under-utilized source of timber; some areas are over-mature and others in need of thinning and pruning. Over the longer term, the softwood plantations could yield 90,000 m^3 of sawn timber per year, half to two-thirds of the estimated demand for sawn timber in 2000. They could thus relieve, to a substantial extent, pressure on the ecologically fragile natural hardwood forests, and millers should be encouraged to exploit these timber resources. Work plans exist for about one-third of the softwood area. following inventory work carried out in 1984-85 with the Overseas Development Administration (ODA) assistance.

Woodfuel Production

1.16 Woodfuel plantations were first planted in Uganda over 60 years ago to provide fuelwood and poles for domestic urban consumption, as well as for the railways. Plantations were often established in swampy mosquito infested land inappropriate for agriculture and played a role in reducing malaria. By the 1970s, 10,900 ha had been established in 22 sites around 12 major towns, mainly of eucalyptus. Many of these plantations are now overaged and degraded and have been abandoned, replanting programs do not exist, and the management system for all woodfuel plantations has broken down. There is a need to re-establish wood production on these areas to meet the wood energy and pole needs of the urban population.

1.17 The bulk of woodfuel supply comes from woody vegetation on public and private lands. Forestry extension to encourage establishment of private woodlots started as early as the 1930s, and in the more densely populated rural areas of southwest Uganda, and around Kampala, small eucalyptus woodlots for timber and poles are a common feature. Farm forestry activities over the past three years have been encouraged in the southwest by a project financed by CARE, an American Voluntary Agency, supporting nursery establishment, distribution of seedlings, and extension. The project has now spread to northern and eastern Uganda.

Demand for Forest Products

1.18 Woodfuels. Forest resources' largest use is for woodfuels, which account for 96% of domestic energy consumption. Current consumption of woodfuel is not known: estimates vary from 8 to 12 million metric tons of wood, depending on assumptions used for rural domestic fuelwood consumption, which account for 80-85% of total consumption of woodfuels. Of this total, wood requirements for charcoal are estimated at about 580,000 tons. There are wide regional variations and data are lacking but the theoretical sustainable yields of woody biomass, for all purposes, are estimated at about 10.8 million metric tons. These yields are not being obtained, however, because of poor management; forest resources inappropriate for woodfuels are being cut down for this purpose, damaging the resource base. Demand, even assuming some urban consumers switching

from charcoal to electricity, is likely to increase by about 65% by the year 2000. Thus even with improved management demand will exceed present supply within 15 years. There is thus a need to increase supply and improve management of the resource base now, in order to avoid crisis in the future.

Timber and Poles

1.19 Data on timber and pole consumption and production are lacking. It is estimated that 1985 demand for construction poles was about 4-5 million poles per year; demand should increase broadly in line with population, i.e. double over the next 25 years. Current sawn timber demand is estimated at about 83,000 m^3 2/ and would grow to about 130,000 m^3 by the year 2000 assuming low GDP growth (3% p.a.), or to 170,000 m^3 for high GDP growth (5% p.a.). A timber marketing survey is needed to provide a better assessment of demand, both domestically and internationally, of Uganda's timber products.

1.20 Sawn timber output is estimated at 20,000 m^3 from the sawmilling industry, the balance being met by pitsawers. Timber production from the natural forests and plantations could meet demands for the foreseeable future, but only with sound management, and organized replanting and enrichment programs.

1.21 Poor management is the main cause of deterioration in Uganda's forest resource rather than lack of natural production potential. If the trend is not rapidly reversed, remedies will be increasingly costly and benefits will take longer to be realized.

D. Forestry and Energy Institutions

1.22 The Forest Department, currently within the Ministry of Agriculture and Forestry (MAF), is responsible for the country's forestry sector. The Government intends to transfer by July 1, 1987, the FD from MAF to the Ministry of Environment. The FD's activities include management, protection, extension and development of the nation's forest reserves. The department's administrative headquarters are at Entebbe, and the central research station is at Nakawa in Kampala. However, the great majority of staff (117 out of 143 graduates in post and 163 out of 189 foresters), are posted to field assignments at district level or in forest reserves. Under the Chief Forester Officer (CFO) is a principal research officer, a deputy and an assistant chief. Seven functional and service sections support the CFO: administration, forest resources, protection, planning, inventories and working plans, environmental protection and extension, and research. Thirty-three District Forest Officers (DFOs) are responsible for all forestry activities within their district. They report to 10 Regional Forest Officers, who report in turn to the deputy chief. Work programs and budgets are prepared at the district level, checked and consolidated by the Regional Officers, centralized by Entebbe, and then submitted through the MAF to the Treasury.

2/ Sawntimber consumption was 80,000 m^3 in 1970; had the economy continued to develop, it would have been 150,000 m^3 by 1985.

1.23 The staff establishment for 1985-86 is indicated below.

Level	Number
Forest Officers	160
Foresters (diploma level)	215
Forest Rangers (certificate level)	307
Administrative and support staff	100
Forest guards	600 3/ (non-establishment positions)

Numbers have changed little in 3 years. However, 40% of graduate forestry officers have been appointed since 1979, compared with 2% of foresters; the senior level is both top heavy and lacking field experience.

1.24 Forestry activities include farm forestry extension in all districts. For natural forests, they include maintenance of natural forest boundaries, stockmapping and establishment of workplans for areas to be logged, collection of royalties, forest enrichment and nature conservation. They also include establishment and maintenance of softwood plantations and control of logging in these, and maintenance and sale of wood from peri-urban plantations. They include control of cutting of specified species from savannah woodland and public land, and allocation of licences for charcoal burning. Revenues from royalties, licences and wood sales are directed to the Treasury.

1.25 Government's last statement of forestry policy was in 1970. Objectives included management and development of the nation's forest reserves to maximize economic production of timber and other forest products, protect water catchments, soils, wildlife and amenities, ensure efficient wood utilization and carry out extension programs to ensure planting and protection of trees. These objectives are valid today but need updating.

1.26 The FD is grossly underbudgeted, particularly as regards provision of tools and equipment. In 1985-86, only 0.25% of the national recurrent budget, or U Sh 648 M was allocated to the Forestry Department. However, only 3% of this recurrent allocation was for tools and equipment, and most districts received no allocation at all under these categories for 1984-85 or 1985-86. None of the districts except those where CARE was operating had any transport at all at time of appraisal. DFOs typically receive about a quarter of their budget request, almost all for casual labor, and they do not have the right to re-allocate the budget they do receive between categories to help them work more efficiently with the funds they have. Thus, even though there may be funds for employment of labor, they cannot be used effectively because of lack of funds for tools

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3/ Guards were removed from the formal establishment in the late 1960's but remain on the payroll. Many have substantial field experience. Their reinstatement in the establishment would increase their status and security and thereby improve their effectiveness in protecting the forestry resource.

or transport for supervisory staff, or even stationary on which to record royalty collection. A further difficulty is the frequent late arrival of funds, and the fact that wages for casual labor are fixed at U Sh 6,000 per month (US$4 per month), a rate much too low to retain a reliable workforce. Although the work program mechanism exists and is respected, field staff cannot fulfill their responsibilities effectively without tools, equipment and operating cost allowance. Demoralization is widespread.

Training

1.27 Technician training is carried out at Nyabyeya Forestry College in Western Uganda. The college has substantial forest land, and has the capacity to train 25 certificate-level forest rangers per year on a 2-year course, and 25 diploma-level foresters per year on a 1-year additional course. The school is well designed; however, almost all dormitory, kitchen and classroom equipment has been looted, there has been no water supply for 6 years, and there is little teaching or forestry equipment. The school has been closed for one year. The curriculum is in need of revision to emphasize more forestry extension. A further problem is that most teachers at Nyabyeya lack field experience, and this limitation, combined with lack of equipment, prevents students from receiving effective practical training. There is currently no provision for refresher training for forestry staff. There is a need to provide this training for staff at all levels including forest officers and forest guards, to rehabilitate the college, and to improve the quality of its teachers. The sawmilling operations facility at Nakawa should also be rehabilitated to provide training to improve the standard of wood utilization in forest industries.

1.28 Graduate training is provided at Makerere University at a department originally designed to serve the East African community. Partly as a result of oversupply of forestry graduates, the graduate establishment of the FD increased from 40 in 1970 to 160 at present, while work output declined sharply as resources dwindled. Graduates are not however guaranteed a job in the Civil Service, and the FD has not recruited forestry graduates for the last two years.

Research

1.29 The FD has a long tradition of applied research in wood utilization and silviculture, and there are sample plots in forest areas. Effective field research and plot monitoring has come to a standstill, and many records have been destroyed. The current priority apart from establishing cost-effective means for reforesting encroachments is to revive ongoing trials and seed collection, rather than to embark on new original research.

Ministries of Energy and Environment

1.30 The Ministry of Energy has recently been created, and currently has only minimal staff. It contains five departments: petroleum, hydroelectricity, renewables, conservation, and research and planning. The Ministry of Finance currently retains responsibility for pricing policy and petroleum products procurement, and the Uganda Electricity Board (UEB) is

responsible for electric power generation. Finance for strengthening energy planning has been provided under a UNDP/World Bank Energy Sector Management Assistance Program (ESMAP), but it will take time for the capacity of the ministry to be built up. The IDA-financed Second Power Project (Cr. 1560-UG) includes provision for a charcoal marketing and a household energy survey, and biomass inventory of private lands. These studies will form key inputs into long-term planning for the forestry sector.

1.31 The Ministry of Environment has also been recently created with four departments: Natural Resources, Environmental Education, Chemicals and Operations. Government has officially stated that a fifth department, the FD, will be established within the Ministry as of July 1, 1987. It hopes to receive assistance from United Nations Environment Program (UNEP) for a natural resources survey.

1.32 Close coordination of the forestry project activities with those of the Ministry of Energy will be essential.

E. Bank and Other Donor Involvement in the Sector and Subsector

1.33 After the overthrow of the military dictatorship in 1979, IDA assistance was focused on program credits to provide foreign exchange for imported inputs for production. The IDA Agricutural Rehabilitation Project (ARP, Credit 1328-UG, 1983, cost US$70 M) finances inputs, equipment for rehabilitation of the export industries, and studies. The Agricultural Development Project (ADP, Cr. 1539-UG, cofinanced with IFAD, cost US$30 M) provides inputs for farmers in seven districts and includes several small research or pilot institution-building components. It includes US$102,000 for provision of forest nursery equipment. Sugar and tea rehabilitation projects are planned for FY 88 and FY 89 aiming at export promotion or import substitution.

1.34 Donor involvement in the forestry subsector has been modest to date. French bilateral aid has provided equipment for rehabilitation of Kiira sawmill and plywood factory at Jinja. German bilateral aid financed aerial photograhy of Budongo forest in Western Uganda, while ODA have financed detailed inventories in about one-third of the softwood plantations. The surveys planned under the Second Power Project are described in para. 1.30.

1.35 A most successful farm forestry project has been financed by CARE Uganda. The first project for US$1.2 M has covered five districts in Southwest Uganda and has successfully worked with Forestry Department staff and provided on-the-job training in farm forestry. CARE have now started "spearheading" operations in five northern and eastern districts, leaving the FD full responsibility for management of the program in Southwest Uganda. The CARE approach, with low profile technical assistance, logistical support and training to the FD to provide extension services on nursery establishment and agroforestry, has been responsive and flexible to farmers' needs, and should be adopted more widely.

1.36 On nature conservation, the World Wildlife Fund for the last 15 years have been financing a study of primates, birds and animal response to changes in the habitat brought about by logging in Kibale forest. The study has recently been broadened to include present ecology of several forests in Uganda. These studies have confirmed that wildlife rapidly becomes depleted if the variety of tree species and vegetation is reduced (and seasonal food sources limited), and that areas with poor forest regeneration after logging cannot effectively support wildlife.

F. Project Origin and Justification

1.37 An Energy Sector Report (No. 4453 of July 1983) carried out for Uganda under the joint UNDP/World Bank Energy Sector Assessment Program identified the problem of deforestation and fuelwood supply shortages around urban areas. The IDA Agricultural Sector Memorandum (Report No. 5044-UG of July 30, 1954) emphasized the problem of deteriorating management of the forest resource base and the need to reverse the trend of forest degradation. Government identified the need for reforestation as a priority and requested IDA to identify a forestry project in late 1984. The project was prepared in 1985 by the Bank Energy Sector Management Assessment Program (ESMAP) with Canadian financial assistance. An IDA mission, which included consultants from EEC visited Uganda in July 1986 and appraised the project.

1.38 IDA is already involved in the energy sector through the Second Power project, which includes a number of woodfuel energy related studies (para. 1.30). The proposed project builds on this involvement through addressing the supply and management side of the wood resource. The project includes a nature conservation component with specific measures to improve environmental management. It aims at rehabilitating the overall forestry sector through strengthening of institutional management while promoting private sector wood production and exploitation of the forests, in line with the IDA agricultural strategy for Uganda. The project would ensure the sustainability of the program beyond the project period through increased royalties and license fees, and its successful implementation is relatively less dependent on the macroeconomic policy environment.

II. THE PROJECT

A. Project Objectives

2.01 The overall objective of the project is to improve management of Uganda's forest resources to meet domestic needs for timber, fuelwood and other wood products on a sustained basis, while at the same time increasing the area and improving the management of conservation forests in order to protect unique ecological systems. The specific objectives are summarized below:

(i) To increase the production of woodfuels and poles for the urban population through encouraging private wood farming in peri-urban areas and managed production of charcoal in natural forests;

(ii) To increase the production of wood products for the rural population and conserve soil fertility through encouraging farmers and community groups to plant multi-purpose tree species for fuelwood, poles, fodder, fruit and soil enrichment;

(iii) To manage and conserve Uganda's natural forests for sustained timber and charcoal production by the private sector, for revenue collection from logging, for environmental protection and nature conservation;

(iv) To increase the productivity of the softwood plantations for sustained production by the private sector of timber, and to encourage a shift in exploitation for timber from the ecologically fragile natural forests to the softwood plantations;

(v) To provide logistical and institutional support to the FD for achievement of the above objectives and to create the information and management base for long term planning, development and conservation of Uganda's forest resources.

B. General Description

Summary of Components

2.02 The project would cover a seven year period. Project components are summarized below and detailed in paras. 2.04 to 2.25.

(i) Peri-urban plantations and pilot wood farms: direct establishment of 900 ha of eucalyptus plantations for demonstration purposes; provision of seedlings for establishment by private farmers of 1,000 ha for production of fuelwood and poles on a pilot basis, all in peri-urban areas on FD land;

(ii) Farm forestry: Establishment of nurseries in rural areas for production of 27 M seedlings annually by year 6 of multipurpose species to be planted by farmers and non-government agencies, extension, farmers' training and agroforestry demonstration;

(iii) Natural forest management rehabilitation: redemarcation of 1,350 kms. of forest boundaries, encroachment and enrichment planting of 26,000 ha, extension for improved charcoal production, improved logging management and revenue collection, management and biomass inventory and establishment of working plans for selected natural forests and plantations, and forest patrolling. Nature conservation areas would be increased from 5% to 20% of the natural forest area and managed as such, and protected areas with only limited logging would cover an additional 30%;

(iv) Softwood plantation rehabilitation: rehabilitation of 13,900 ha of softwood plantations, including pruning, thinning, felling, new planting of 2,750 ha and re-establishment of fire-protection systems;

(v) Rehabilitation of the Forestry Department: rehabilitation of offices and accommodation, provision of transport and forestry equipment for supervision of forest activities, technical assistance for planning, procurement and financial management, and studies; and

(vi) Training: rehabilitation of Nyabyeya Forest College to provide in-service training as well as training for new forestry staff; rehabilitation of Nakawa sawmill to provide training in mill and logging operations; limited study tours.

Project Area

2.03 Over the project period the objective is to improve management of Uganda's forest resource base throughout the country, and logistical support would be provided to all districts (see IBRD Map No. 20050). Farm forestry would be carried out in 26 of the 33 districts by the end of the project period. The peri-urban woodfarming would be carried out around Kampala, Jinja, Tororo, Mbale (the principal towns in densely populated eastern Uganda), Arua and Mbarara (cities in drier parts of north-western and western Uganda respectively, facing growing fuelwood shortages). Encroachment planting would be concentrated in Mabira, South Busoga, Mount Elgon, Semliki and Kibale forests. Nature reserves would include areas in Budongo, Bwindi, Mabira, Mgahinga, Maramagambo, Bugoma, Kasagala, Kibale, Mount Elgon, Semliki and Kalinzu forests. Thinning and pruning in softwood plantations would be on a priority basis, but would start in Mafuga, Kiirima and Muko, where detailed working plans have already been prepared. New softwood plantations would be in Lendu, Mafuga, Bugamba, Mwenge, Bukaleba and South Busoga working plan areas. Training would take place at Nakawa, in Kampala, for sawmill operations, and at Nyabyeya near Masindi for in-service training.

C. Detailed Description

(a) Energy Farming (US$0.8 M) 4/

2.04 Forestry Department Peri-urban Plantations. The project would establish and maintain 900 ha of plantations, replacing degraded peri-urban fuelwood/pole plantations on gazetted forestry land in peri-urban areas. The plantings would serve for trials and demonstration of different species as well as silvicultural and management techniques. The plantations would produce woodfuels and/or poles for use in nearby urban areas. The actual end-use of the wood would be determined by the local market.

2.05 The plantations would be provided with growing stock from six nurseries which would be rehabilitated and expanded to produce up to 400,000 seedlings each per year. Inputs for a total of 5.7 M seedlings through the project would be provided. About 65% of the nursery stock could be available to private planters for the establishment of woodlots around urban areas. (See para. 2.07). Tubed stock would be used with a variety of currently acceptable species such as Eucalyptus grandis and Markhamia platycalyx as well as introduced species such as other species of eucalyptus, Acrocarpus fraxinifolius, Cassia siamea, Azadirachta indica and Melia azardirach.

2.06 The planting sites would be prepared using a low cost taungya system (licensing of farmers to use the plantations land in advance of tree planting so that by the time seedlings are planted the land has been fully cultivated and prepared. The farmers continue cultivation of agricultural crops until trees shade them out). Taungya greatly reduces the three greatest direct costs of plantation establishment -- land clearing, soil cultivation and weeding. However, some weeding would still need to be done by the FD after the farmer has vacated the land. The FD will also be responsible for digging of pits, planting and beating up. Four year rotations would be the general practice and between four and six coppice rotations can be expected.

2.07 Integrated Pilot Wood Farms. The project would provide, through the project nurseries, sufficient seedlings to plant a minimum of 1,000 ha of private woodlots, over five years at the six peri-urban locations. The program would test possible approaches to encouraging private sector involvement in short-rotation wood production under license on forest department peri-urban land. Progress would be reviewed during implementation and the scheme expanded if response is favorable. Seedlings would be sold by the FD at 50% of direct production costs, i.e., U Sh 15. Eventually it is proposed that nursery packages be sold to the farmers to enable them to produce their own seedlings. The FD would provide, free of charge, technical advice on woodlot establishment, maintenance and management.

4/ All costs are expressed in base costs.

2.08 The project would finance rehabilitation of 50 km. of plantation roads[5/] (serving both the FD and wood farmers' plantations), and construction of 16 staff houses (see Annex 3, Table 101).

(b) Farm Forestry (US$6.8 M)

2.09 The project would provide for the establishment of a total of 1,020 nurseries in 26 districts producing 27 M seedlings annually by year 6, for planting and raising of trees by farmers for a variety of purposes, including fuelwood, poles, timber, fodder, fruit, agroforestry and soil enrichment. Annex 9 provides a list of possible species. It would provide short training courses in farm forestry through the project period for a total of 52 forest officers, 204 foresters/forest rangers, and 120 forest guards. The program would be supported by three expatriate farm forestry specialists and three VSOs throughout the project period. Annex 7 contains TORs for these specialists. Accommodation and travel allowances would be provided for FD staff, as well as vehicles, operating costs, and extension materials (see Annex 3, Tables 201 and 202).

2.10 The program would be implemented in cooperation with CARE (see para. 1.35) which would provide the technical assistance and introduce farm forestry into districts where it has not been practiced before. CARE would "spearhead" the operation, training FD staff, selecting suitable nursery sites, tree species, production methods and planting dates, and establishing extension programs. After a minimum of two years, responsibility for Farm Forestry operations would be handed over to FD, though CARE would continue to provide some technical and monitoring support. CARE are already operating in 11 districts and would start farm forestry in some five new districts every two years; thus by the end of the project there would be farm forestry activities in about 26 out of the 33 districts. Extension would include assistance with site selection, preparation for planting, planting time and distances, agroforestry configurations, weeding, protection from fire and browsing, pruning, harvesting and coppicing. It would also involve contact with non-government agencies and groups interested in farm forestry; indeed a major thrust of the program would be to encourage community participation and self-help nurseries. As the system develops, greater coordination between the Agricultural Department and FD would be established.

2.11 The project would establish three Agroforestry Research and Demonstration Centers (ARDCs) at District Farm Institutes (DFIs), to be identified after project start up. They would be operated with the Department of Agriculture to contribute to training for farmers and as a general field demonstration. The ARDC's will cater for agroforestry research (see also para. 2.23) and would promote establishment of agroforestry demonstration plots on farmers fields. (See Annex 3, Table 203).

2.12 The project would provide direct assistance to NGOs interested in promoting farm forestry activities through provision of appropriate tools, equipment and other materials on a grant basis to a total of US$150,000.

5/ Physical targets for major components are outlined in Annex 6, Table 2.

A committee to review requests for grants would be set up (see para. 4.10) and the maximum grant to any one NGO would be US$10,000.

(c) Natural Forest Management Rehabilitation (US$5.6 M)

2.13 Natural Forest Management (US$4.3 M). The project would provide for boundary demarcation and maintenance in natural high forests and savannah reserves. A total of 1,350 kms. of high forest boundaries would be planted with marker trees at 30 m intervals; while about one-third of the savannah reserve area of 632,000 ha would be planted with marker trees at 30 m intervals. Seedlings of fast-growing species such as Cassia sp and Cupressus lusitanica would be provided for the natural high forests, and cactus, Draceana, Euphorbia sisal, Acacia or Prosopsis plants for the savannah reserve (see Annex 3, Tables 301 and 302).

2.14 The project would finance the rehabilitation of 26,000 ha of natural forest through reafforestation of 17,000 ha of encroachment forest and enrichment of 9,000 ha of degenerated forest, following logging or failed TSI (timber stand improvement) operations. Most planting will be done using Maesopsis eminii together with other naturally occurring species, e.g., Chlorophora, Cordia, Entandrophragma, Nauclea and Terminalia species in mixture. Four regional nurseries would be established to support the rehabilitation and boundary operations, with small "flying" nurseries as appropriate in forest areas. They would produce a total of 1 M seedlings annually. Where needed, accommodation, transport, night allowance and equipment would be provided to the staff involved in these activities (Annex 2, Table 303).

2.15 The project would provide for extension advice to private charcoalers and control of charcoal burners in the natural forests. They would be integrated into natural forest management, following logging operations by burning waste wood, and leaving land clear for enrichment planting. Improved round kilns based on the Casamance kiln would be introduced in preference to the Banyankole long kiln. The project would provide accommodation, logistical support and mensuration equipment to extension workers, and 6 man months of technical assistance in charcoal making management in natural forests through the first three years of the project (Annex 2, Table 304).

2.16 The project would finance improved logging management, establishment of detailed forest working plans, and revenue collection from logging operations, through provision of accommodation, transport, allowances and mensuration equipment (Annex 3, Table 305).

2.17 Natural Forest Conservation (US$0.7 M). The project would increase the proportion of natural forest identified as nature reserves from 5% to 20% through the project period. Three nature conservation officers would be appointed to define conservation areas and study species composition, 12 forest guards would be provided with the means (housing, transport, tools, labor) to ensure maintenance of reserves and keep records (e.g., on flowering of species and animal movements). Technical support and field training would be provided by the World Wildlife Project in Kibale Forest. The project would protect the nature reserves by "buffer

zones" managed so as to minimize disturbance with only limited pit sawing permitted. The aim by the end of the project would be to manage 20% of the natural forest as nature reserve with an additional 30% as protective buffer zone. The project would provide for publicity programs for environmental conservation in natural forests through the media and encouragement of farmer participation (Annex 3, Table 306).

2.18 Inventory (US$0.6 M). The project would finance, over a three-year period, an inventory of standing merchantable timber and biomass in the natural forests and plantations, with the objective of establishing stocking rates, sustained timber yield and working plans. It would finance aerial photography, measuring and camping equipment, transport, allowances, materials and 20 months technical assistance, including an inventory specialist (16 months) and computer programmer (4 months). (Annex 3, Table 307). In addition, provision is made to fund a consultant who would draw up TORs for a natural biomass study which would be conducted within the FD under the Second Power Project (para. 1.30). The TORs are contained in Annex 7.

(d) Industrial Softwood Plantation Rehabilitation (US$1.8 M)

2.19 The project would finance the rehabilitation of 13,900 ha of softwood plantations left unmanaged over the last 10 to 12 years. It would provide labor and equipment for the pruning of 2,000 ha of plantation for first thinnings over approximately 2,500 ha; for marking for 4,800 ha of second thinnings and 2,700 ha of third thinnings and for the felling of about 3,400 ha of second thinnings and 1,350 ha of third thinnings not expected be harvested by concessionaires. It would finance rehabilitation of 200 km. of plantation roads. It will also provide for the planting of 2,750 ha of plantations (2,000 ha being replanting of clear felled plantation areas). The component provides for the rehabilitation and operation of six nurseries, each producing 200,000 seedlings per year. Cupressus lusitanica would be planted at all sites suited to it, the remainder being planted with P. patula or P. caribaea. A taungya system would be used to prepare the sites and provide early weeding.

2.20 The project would finance 1(firetrucks, fire-fighting equipment and labor to re-establish effective fire-fighting systems. It would finance the rehabilitation or construction of 35 houses to accommodate staff in plantation areas, office and field equipment and transport. Finally, provision is made for 12 man-months of technical assistance in plantation management (Annex 3, Table 401).

(e) Forest Department Rehabilitation (US$7.6 M)

2.21 Logistical Support (US$5.0 M). The project would finance the rehabilitation of offices at the district and regional level and provide new buildings where necessary. Space at the present headquarters is extremely limited, so provision would be made to move the FD headquarters from Entebbe to Nakawa by constructing a new office in the grounds of the Forestry Research Center. Provision would also be made for rehabilitating 30 existing staff houses and constructing 16 new houses in selected districts and at Nakawa. Office equipment, furniture and materials would also be provided, as would funds for building maintenance. Provision would be made for one 4-WD vehicle for each Regional Forest Officer (10) and DFO (33) and motorcycles and bicycles. At headquarters, the project would provide three 4-WD vehicles and five 7-ton trucks. Provision would also

be made for overnight and day allowances for staff. These are intended primarily to permit overnight travel, but would also act as incentives to staff (Annex 3, Table 501).

2.22 Planning and Management (US$2.3 M). Technical assistance would be provided under a PPF (Project Preparation Facility), and during the first three years of the project to improve program planning and execution capability. Provision would be made for a Project Implementation Team (PIT), which would include a project coordinator for 51 months, a senior planning officer and financial controller each for 45 man-months, and a procurement manager for 42 man-months. Counterparts would be nominated for the main technical assistance positions. All the experts would continue periodic follow-up support visits after the end of the main contract period. A monitoring and evaluation specialist and building supervisor would be provided for 8 and 10 months respectively, composed of short-term visits through the project period. On-the-job training would comprise a major part of technical assistance. The project would finance studies, including the inventory described in para. 2.18, an inventory of milling and logging equipment, a study on encroachment, and a study of market potential for Ugandan timber products. (See Annex 3, Table 502 for costs and Annex 7 for terms of reference for technical assistance).

2.23 Research (US$0.3 M). New primary research is not considered a priority at present, given the work on silviculture and wood properties that was carried out in the 1960's and the priority needs of rehabilitation. The project would, however, provide equipment, transport and materials for a review of past research and trials, and initiation when appropriate of new silvicultural and provenance trials for timber, energy wood/pole and agroforestry species within farm systems. A total of 6 man-months of expertise in silvicultural agroforestry research would be provided. It would finance rehabilitation of the seed center at Nakawa and construction of a new seed center at Fort Portal with appropriate equipment, and ensure collection, storage and distribution of good quality seed (Annex 3, Table 504).

(f) Training (US$2.1 M)

2.24 In-service Training and Rehabilitation of Nyabyeya Forest College (US$1.4 M). A major gap in FD's activities over the past ten years has been the absence of a comprehensive in-service training program. The project would fund overseas study tours, short fellowships, courses in farm forestry at Makerere College, short refresher training courses at Nyabyeya Forestry College (NFC) for all staff from DFO's to forest guards, and farmer training at ARDC's (600 man-months). This amounts to about 150 manyears of training. Details of the frequency and numbers of staff participating in these courses are in Annex 6, Table 1. Nyabyeya Forest College would act as the center for refresher training as well as continuing to provide initial training for foresters and rangers. The project would fund rehabilitation of its buildings and equipment, provide transport, furniture and teaching aids, and operating costs. In-service training would start in year 2 after rehabilitation is complete. The project would also fund a total of 41 man-months of technical expertise in forestry training through the project period, to prepare curricula, organize study tours and train teachers (Annex 3, Table 601).

2.25 Sawmill and Logging Operations Training (US$0.7 M). The project would finance the redesign and reconstruction of the Nakawa sawmill so that it can serve as a training facility for sawmill operators and supervisory staff. Funds would also be made available to repair an existing log skidder and to provide equipment, vehicles and materials for training courses in log harvesting and transport. Technical assistance to supervise mill rehabilitation and train trainers would total 26 man-months and would include a sawmill design engineer/mill operations trainer, and saw doctor and logging trainers (Annex 3, Table 602).

D. Technical Assistance

2.26 A summary of technical assistance provisions is given in Annex 7, Table 1, and this is followed by terms of reference for all technical assistance positions. Technical assistance totals 1,027 man-months, but 576 man-months would comprise low cost technical assistance provided by CARE on a grant basis. Thus IDA financed technical assistance expenditures would cover a total of 38 man-years, comprising 13% of project costs. Although considerable, this level of TA is essential to the rehabilitation of the Forestry Department until experienced Uganda staff are available. Training of counterpart staff would form a key part of experts' terms of reference. A feature of several positions would be repeated short-term visits (one to two months per year) throughout the project period, to provide continued advice on implementation, while retaining full responsibility with the FD.

E. Forest Policy

2.27 Government has proposed a draft revised National Forest Policy Statement (Annex 10) which was reviewed during negotiations. Key objectives include establishing forest management and development practices that would ensure long-term sustainable yields of merchantable timber, while at the same time protecting water catchments, wildlife resources and biological diversity. The Policy Statement incorporates a directive to carry out extension programs to ensure planting and protection of trees, and the expansion of the research program to include monitoring and evaluating of environmental resources and biotic diversity. Assurances were obtained at negotiations that the Government would formally adopt the Policy Statement by December 31, 1987, and amend, if required, the existing forestry legislation by June 30, 1988 [para. 8.01(i)].

F. Environmental Impact

2.28 A key objective of the project is to improve environmental management and to arrest uncontrolled overcutting of natural forests. The project therefore contains several measures to ensure environmental protection of forest resources. First, the inventory would provide the

information base for long term management and conservation of the forests. Second, the natural forest management activities incude provision for demarcating and maintaining boundaries and for enriching impoverished and encroached forest areas. Third, logging activities would be improved through development of working plans for areas to be logged, stockmapping and control of logging, and training in wood utilization to reduce waste. Fourth, the nature conservation component provides for in increase in the area of natural forest identified and managed as nature reserves from 5% to 20% during the project period, and provides for an additional 30% to be managed as a protective "buffer zone," with only limited pitsawing permitted. The component would be managed in coordination with the World Wildlife Project in Kibale forest. Fifth, the project provides for concessionary royalties for logging in softwood plantations, to encourage a shift in logging activities from the ecologically fragile natural forests to the softwood plantations. On the supply side, production of wood products would be increased, and the need to cut timber in the natural forests reduce, through wood farming in urban areas and social forestry in rural areas (for fuelwood and poles) and through softwood plantation rehabilitation (for timber). Sixth, the project provides for publicity programs for environmental conservation in natural forests through the media and encouragement of farmer participation.

III. PROJECT COST AND FINANCING

A. Cost Estimates

3.01 Total costs, including contingencies, are estimated at US$33.3 M, of which US$21.7 M (65%) would be foreign exchange cost and US$0.4 M (1%) duties and taxes. Summary project costs are in Table 3.01 and details are in Annex 3.

3.02 The base cost is estimated as of April 1987. Physical contingencies are 10% for all cost categories except technical assistance, for which no contingencies have been provided. Price contingencies, accounting for 25% of the base cost plus physical contingencies are estimated on the basis of projected inflation rates. Estimates for local and international inflation rates are in Annex 2, Table 2.

B. Financing

3.03 The project would be financed by IDA, EEC, DANIDA, UNDP, CARE and GOU as summarized in Table 3.02. An IDA credit of US$13.0 M would finance the Industrial Software, Plantation Rehabilitation, Forestry Department Rehabilitation, the Forestry Inventory and vehicle, equipment and civil works for the Training components. EEC would contribute US$7.0 M to finance the Energy Farming and Natural Forest Management Rehabilitation components. DANIDA would contribute US$7.5 M to finance the Farm Forestry component. CARE would contribute US$0.2 M to finance the FD staff training of the Farm Forestry component. UNDP would contribute US$2.2 M to finance the Training component of the project, which would be executed by FAO, under an agreement with UNDP. Execution of cofinancing agreements satisfactory to IDA, by GOU, EEC, DANIDA, UNDP and CARE would be a condition of credit effectiveness (para. 8.02(i)).

Table 3.01

PROJECT COST SUMMARY

	(U. Sh. Million)					(US$ '000)				
	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs
A. ENERGY FARMING										
1. PERI-URBAN FUELWOOD/POLE PLANTATION REHABILITATION/IMPF	1,104.8	3,528.0	4,632.8	76	3	184.1	588.0	772.1	76	3
Sub-Total ENERGY FARMING	1,104.8	3,528.0	4,632.8	76	3	184.1	588.0	772.1	76	3
B. FARM FORESTRY										
1. UFD TAKEOVER OPERATION	8,078.7	16,571.1	24,649.8	67	17	1,346.5	2,761.8	4,108.3	67	17
2. NGO ACTIVITIES	3,391.4	12,559.3	15,950.7	79	11	565.2	2,093.2	2,658.5	79	11
3. AGROFORESTRY DEMONSTRATION CENTERS	61.8	154.0	215.8	71	0	10.3	25.7	36.0	71	0
Sub-Total FARM FORESTRY	11,532.0	29,284.4	40,816.4	72	28	1,922.0	4,880.7	6,802.7	72	28
C. NATURAL FOREST MANAGEMENT REHABILITATION										
1. NATURAL FOREST MANAGEMENT	6,977.5	18,552.4	25,529.9	73	17	1,162.9	3,092.1	4,255.0	73	17
2. NATURAL FOREST CONSERVATION	436.5	3,937.7	4,374.2	90	3	72.7	656.3	729.0	90	3
3. FOREST INVENTORY	861.4	2,416.2	3,277.5	74	2	143.6	402.7	546.3	74	2
Sub-Total NATURAL FOREST MANAGEMENT REHABILITATION	8,275.4	24,906.3	33,181.7	75	22	1,379.2	4,151.0	5,530.3	75	22
D. INDUSTRIAL SOFTWOODS PLANTATION REHABILITATION	2,652.0	8,509.8	11,161.8	76	8	442.0	1,418.3	1,860.3	76	8
E. FOREST DEPARTMENT REHABILITATION										
1. LOGISTICAL SUPPORT	5,302.2	24,884.5	30,256.8	82	20	883.7	4,144.1	5,042.8	82	20
2. PLANNING AND MANAGEMENT	1,491.4	12,020.9	13,512.3	89	9	248.6	2,003.5	2,252.1	89	9
3. RESEARCH	240.6	1,414.4	1,655.0	85	1	40.1	235.7	275.8	85	1
Sub-Total FOREST DEPARTMENT REHABILITATION	7,124.1	38,299.8	45,423.9	84	31	1,187.4	6,383.3	7,570.7	84	31
F. TRAINING										
1. REHABILITATION OF NYABEVEYA FOREST COLLEGE	3,199.1	5,260.6	8,459.7	62	6	533.2	876.8	1,409.9	62	6
2. WOOD UTILIZATION - MAKAWA	331.0	3,828.2	4,157.2	92	3	55.2	637.7	692.9	92	3
Sub-Total TRAINING	3,530.1	9,088.8	12,616.9	72	9	588.3	1,514.5	2,102.8	72	9
Total BASELINE COSTS	36,218.3	113,614.9	147,833.2	77	100	5,703.0	18,935.8	24,638.9	77	100
Physical Contingencies	3,055.5	8,496.1	11,481.6	73	8	509.3	1,401.0	1,910.3	73	8
Price Contingencies	76,051.9	74,416.8	150,468.7	49	102	5,424.9	1,339.4	6,780.3	20	27
Total PROJECT COSTS	113,325.7	196,437.8	309,783.5	63	210	11,637.2	21,872.2	33,309.5	65	135

Table 3.02

Financing of Project Costs
(US$ million)

	Local	Foreign	Total	% of Total	% of Net Project Costs
IDA Credit	2.8	10.2	13.0	39.0	39.0
EEC Grant	2.0	5.0	7.0	21.0	21.0
DANIDA Grant	2.0	5.5	7.5	22.0	22.0
UNDP Grant	1.4	0.8	2.2	7.0	7.0
CARE Grant	-	0.2	0.2	1.0	1.0
Government of Uganda	3.0	-	3.0	9.0	10.0
Net Project Costs	11.2	21.7	32.9	99.0	100.0
Taxes and Duties	0.4	-	0.4	1.0	
Total Project Costs	11.6	21.7	33.3	100.0	

Government of Uganda would contribute US$3.4 M towards the financing of local costs. Project start-up activities (including preparation of the first Annual Work Program and procurement documents) would be financed by IDA under a PPF (Project Preparation Facility). PPF cost has been estimated at US$1.25 M and is included in the estimated project cost (Annex 2, Table 1).

C. Procurement

3.04 Procurement arrangements for items financed by IDA are summarized in Table 3.03 below and would be in accordance with IDA guidelines. Procurement for those project elements financed by EEC, UNDP and CARE would be in accordance with their own procurement procedures.

Table 3.03

Proposed Procurement Method
(US$ million)

	ICB	LCB	Other	NA	Total
Civil Works		1.4 (1.4)	3.3		4.7 (1.4)
Vehicles	2.9 (2.9)		3.4 (0.7)		6.3 (3.6)
Equipment	0.3 (0.3)		2.5 (1.6)		2.8 (1.9)
Materials			1.3 (0.1)		1.3 (0.1)
Technical Assistance			6.3 (2.7)		6.3 (2.7)
Training				1.8	1.8
Operations & Maintenance			6.0 (2.8)		6.0 (2.8)
Establishment & Maintenance Labor				2.0 (0.4)	2.0 (0.4)
Staff Allowances				2.1 (0.1)	2.1 (0.1)
Total (IDA Total)	3.2 (3.2)	1.4 (1.4)	22.8 (7.9)	5.9 (0.5)	33.3 (13.0)

Note: Figures in parenthesis are amounts financed by IDA.

3.05 Project civil works (about US$1.4 M) would consist mainly of construction of staff houses, offices, academic buildings, student dormitories and roads. Work would be scattered throughout the project area and over the project period. As designs would be simple and construction technique labor intensive, such contracts would not be suitable for international competitive bidding and would be let through local competitive bidding following procedures acceptable to IDA. Vehicles and some equipment (US$3.2 M) would be purchased by ICB. Domestic preference of 15% would be applied to qualified local manufacturers. Miscellaneous equipment (US$1.6 M) including office and field equipment, would be purchased in lots of relatively low value, inappropriate for ICB. These items would be purchased through limited international tendering for contracts estimated to cost over US$50,000 each. Materials such as seed, fertilizer and polythene bags, would also be purchased through these procedures. Contracts for goods estimated to cost less than US$50,000 each would be made by prudent local shopping or by purchases off the shelf after obtaining at least three quotations, up to a total of US$.5 M.

3.06 The qualifications, experience and terms and conditions of employment of internationally recruited experts and consultants funded by IDA (US$2.5 M) would be according to IDA guidelines and would be subject to IDA approval.6/ To expedite recruitment and provide technical and administrative back-up, internationally recruited technical assistance staff would, where practical, be grouped into teams and procured through consulting firms acceptable to GOU and IDA. The balance of IDA financing would consists of operating costs (US$2.8 M), establishment and maintenance labor (US$0.4 M) and staff allowances (US$0.1 M).

3.07 Bidding packages for goods and works estimated to cost over US$150,000 would be subject to prior IDA review of procurement documentation. This would result in a coverage of about 80% of the total estimated value of contracts financed by IDA. The balance of contracts would be subject to post review by IDA after contract award.

D. Status of Project Preparation

3.08 Project activities, physical implementation targets and requirements for equipment, goods and services have been defined for the project period (Annex 2, Tables 101 to 602 and Annex 6, Table 2). Technologies are known and have been widely practiced in Uganda. A draft work program for the first year, including technical assistance requirements, equipment to be procured and civil works has been prepared and were discussed at negotiations. Standard designs already exist for the bulk of civil works contracts except for the forest guards' houses, for which a low cost technology, widely known in Uganda, would be used. Detailed designs and procurement documents would be prepared under PPF with the assistance of the buildings supervisor and procurement manager.

6/ Guidelines for the use of consultants by World Bank borrowers and by the World Bank as executing agency, Aug. 1981.

Technical assistance for all posts has yet to be identified. Detailed annual work programs (see para. 4.08) for the first year would be prepared with technical assistance under PPF. Nursery establishment and seedling production to ensure planting activities in the first year of project implementation would also be financed under PPF.

E. Disbursements

3.09 Disbursements would be made against the following categories of expenditures:

(a) 100% of foreign and 90% of local expenditures for civil works (US$1.25 M);

(b) 100% of foreign and 90% of local expenditures for vehicles, equipment and materials (US$4.50 M);

(c) 100% of expenditures for technical assistance and training (US$2.25 M);

(d) 50% of expenditures for incremental recurrent cost, including staff allowances, establishment and maintenance labor and operating and maintenance costs (US$2.25 M);7/

(e) 100% of principal disbursed and accrued charges for refund of project preparation facility (US$1.25 M); and

(f) unallocated (US$1.50 M).

3.10 Disbursements for all expenditures would be made against full documentation except where they are reimbursable against statements of expenditure (SOE). Reimbursement of eligible expenditures against incremental recurrent cost and contracts for goods and services valued at less than US$150,000 equivalent in both local and foreign currency would be made solely on the basis of SOE. All documentation authenticating such expenditures would be retained by the FD and made available for review by IDA upon request.

3.11 The proposed credit would be disbursed over seven and a half years based on past experience with similar projects as reflected in the relevant standard profile.

Special Account

3.12 In order to facilitate implementation of the project, it is important that the FD have prompt access to the requisite funds. The FD would maintain a project account for local currency in a commercial bank,

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7/ Actual disbursement would be on a declining basis: 90% until cumulative disbursement under this category reaches US$0.5 M; 70% until US$1.0 M; 50% until US$1.5 M; and 30% until US$2.25 M.

replenished quarterly by GOU, to ensure that the FD has adequate working capital; GOU's initial deposit to the project account would be U Sh 750 M. In addition, to provide foreign exchange in a timely manner and to expedite disbursements, the Borrower would open and maintain a special US dollar account with a commercial bank. The opening of the project and special accounts is a condition of credit effectiveness [para. 8.02(ii)]. The special account would be used to pay the IDA portion of all eligible project expenditures. Upon credit effectiveness and at the request of the Borrower, IDA would make an initial deposit of US$750,000 to the special account, which would be replenished periodically on the basis of the documentary evidence provided to the Association by the Borrower of payments made from the account.

F. Accounts and Audit

3.13 The Forestry Department would maintain separate project accounts to identify physical progress and financial transactions relating to the project in a readily identifiable form to enable them to be audited independently. Separate accounts would also be kept for all expenditures for which credit withdrawal would be made on the basis of statements of expenditure. Independent auditors, acceptable to IDA, would audit the accounts each year. During negotiations, assurances were obtained that audit report would be sent to IDA within six months of the close of the fiscal year and would include an opinion as to whether the credit funds disbursed against statements of expenditures had been used for the purpose for which they were provided [para. 8.01(ii)].

IV. PROJECT ORGANIZATION AND MANAGEMENT

Project Coordination Committee

4.01 The implementation of the project would require close coordination not only between Donors and the FD but also between the Ministries of Agriculture and Forestry, Finance, Energy, Environmental Protection and Planning and Economic Development (MPED). A project coordination committee comprising seven officials of the five ministries, headed by the Permanent Secretary for MAF, would meet twice a year to review project progress and resolve interministerial and donor-related issues. The meetings would be held in May and November each year to synchronize with the review of the AWP prior to the start of each project year and during the middle of the year. Establishment of the project coordination committee would be a condition of credit effectiveness (para. 8.02(iii)).

Project Management

4.02 The Chief Forestry Officer of the FD of MAF would have overall responsibility for implementation of the proposed project. He would be assisted by a team of consultants comprising a Project Coordinator, Senior Planning Officer, Financial Controller, Procurement Manager, Buildings Supervisor and Monitoring and Evaluation Specialist (see TOR, Annex 7). Part of this Project Implementation Team would be funded initially under a PPF so that gearing-up operations can be initiated before project effectiveness. Assurances were obtained during negotiations that counterpart staff for planning, procurement, and financial management, acceptable to IDA, would be provided [para. 8.01(iii)].

Project Organization

4.03 The Forestry Department would be reorganized through a restructuring of existing organizational framework to reflect the importance of farm forestry, requiring no additional staffing. FD has agreed in principle to the reorganization, which would be described in the first detailed Annual Work Program. There would be three major units, each headed by an officer with the rank of Deputy Chief Forest Officer. They would comprise planning and administration, technical services, and research. The Government would reorganize the FD and submit a staffing plan as a condition of credit effectiveness [para. 8.02(iv)].

4.04 Planning and administration would consist of three divisions: (a) forest planning, including project preparation, monitoring, inventory and reports; (b) finance, including procurement and departmental estimates; and (c) administration, including personnel and training.

4.05 Technical services would consist of: (a) Forest Resource Management including natural forest and timber plantation management, preparation of concession licences, and implementation of working plans; (b) Wood Energy and Pole including peri-urban plantation management and pilot wood farms; (c) Forest and Environmental Protection including forest legislation and gazetting, and protection of nature reserves; and (d) Farm Forestry Extension Services including all farm forestry activities, extension to schools, mass communication, and coordination with NGOs.

4.06 The Research Unit responsibilities would cover silvicultural research, forest protection research, forest products research, farm forestry and environmental research.

4.07 Implementation of all project forestry activities in the field would be the responsibility of RF , DFOs and their subordinate staff under the administrative authority of the CFO and with technical guidance from the technical divisions and Forestry Research Unit. The existing staff establishment is sufficient to implement all project activities. An outline staffing plan is provided in Annex 6, Table 3. Forest guards play a key role in implementation of forest activities, although they do not presently form part of the formal establishment. GOU has agreed in principle to reinstate them in the establishment and the formal reinstatement of these staff is a condition of effectiveness [para. 8.02(v)].

Annual Work Program

4.08 Annual Work Programs (AWP) would be prepared by the Project Coordinator, his team and FD staff. The AWP would: review progress to date; describe the forestry work program for the coming year; estimate the staff, equipment, etc., needed to achieve the work program objectives; prepare an appropriate budget; outline details of procurement required and civil works to be constructed; provide details of the program of forestry research; and identify training courses and selected candidates for overseas, local and in-service training. It would also review and revise as necessary, policy regarding royalties and seedling sales prices as well as results of revenue collection in the preceding year. The pace of expansion of project activities for a particular year would be in relation to actual revenue collection in the preceding year. Each AWP would be reviewed and commented upon by IDA. A draft work program, including a staffing plan for the first year, was reviewed and agreed at negotiations. Assurances were obtained that AWPs satisfactory to IDA would be prepared for the ensuing years and that the execution of the project would be carried out with due regard to ecological and environmental factors consistent with the Government's policy on Forest Resource Management [para. 8.01(iv)].

Control of Logging Activities, Concessions and Charcoal Burning

4.09 Control of sawmillers in concession areas, preparation of detailed working plans, control of pitsawers and charcoal burners including revenue collection, would be the responsibility of the relevant district officers, assisted by forest guards and rangers in the logging areas. Sawmillers would be obliged to respect the conditions of their cutting licenses. They would have to use logging and milling equipment consistent with sound forest management practice. Review of equipment would be the responsibility of the utilization section of the Forestry Research Center at Nakawa, which would also review, with the Forest Resources Management Division, all applications for concessions. Assurances were obtained during negotiations that by September 30, 1988, Government would take all

measures necessary to ensure that all forest harvesting licenses issued to mechanical and chemical wood-using industries would include provision for the use of such logging and milling equipment in conformity with sound forest management practices [para. 8.01(vii)]. Pitsawyers' licenses would be controlled, their activities concentrated into coupes, the number of species they cut increased and the individual trees identified. Trees to be felled would be selected and marked by FD rangersand their volume measured either on site (for pitsawyers) or at sawmill yards. Charcoal burners would be organized to make charcoal only in the areas specified on their licenses, which would be issued monthly by the DFOs for every person engaged in charcoal making and would include the name of the forest guard to which the burner reports.

CARE and NGO Involvement in Farm Forestry

4.10 As described in para 2.10, CARE would have direct responsibility for implementing the farm forestry component in 'spearheading' districts, with the assistance of FD staff. During negotiations, CARE, FD and DANIDA agreed to specify their respective responsibilities and to guarantee CARE's access to sufficient funds for operating costs. The administration of NGO grant funds (para. 2.12) would be the responsibility of a coordinating committee comprising FD, CARE and any other entity co-opted for this pupose.

Reporting, Monitoring and Evaluation

4.11 The Forestry Department would prepare semiannual progress reports (quarterly reports may be prepared for internal use) on physical and financial progress in a format acceptable to IDA and in accordance with key indicator guidance established through the AWP mechanism. A monitoring and evaluation expert would provide periodic assistance (total eight months) throughout the project period in designing the progress report and ensuring that targets set through the AWP are measured in a way that is helpful to management. Within six months of completing the project, the Ministry of Agriculture and Forestry would prepare a completion report (PCR) acceptable to IDA that would include all aspects of the project, including the achievement of FD.

Mid-Term Review

4.12 Experience gained with previous projects in Uganda have confirmed the value of a formal mid-term review of project implementation progress and a preliminary evaluation of project impact. Such a procedure would lead to an improvement in the orientation of the project activities. Accordingly, GOU would undertake jointly with the donors a mid-term review in accordance with terms of reference prepared in consultation with IDA. The joint review, to be carried out no later than March 31, 1990, would include a field review of project progress to determine what changes, if any, are required to improve project implementation. Assurances that the mid-term review would be undertaken as outlined were obtained during negotiations [para. 8.01(v)].

V. PRODUCTION, MARKETS AND PRICES

A. Production

5.01 Sawn timber. Sawn timber production will expand over the next ten years as the economy and the construction industry recover. These production increases will be due to investments by the private sector in milling operations; the project will lay the management base for these production increases to be sustained.

5.02 Direct production increases from the project are detailed in Annex 4, Table 1. Incremental yields from the natural forests comprise timber and charcoal from improved management of logging operations, refinement, and improved wood utilization following training. Incremental yields from enrichment planting begin only after 30 years, when fast growing hardwoods such as Maesopsis eminii can be harvested. Up to year 30, incremental yields average 45-50,000 m^3 per year of roundwood, and 30-40,000 tons of charcoal. By year 32, incremental yields are 570,000 m^3 of hardwood per year as the Maesopsis reach harvestable age.

5.03 Incremental yields from the softwood plantations would be the result of thinning operations, reduced losses from windfall and fire due to improved management and improved utilization. These would average 30-40,000 m^3 of roundwood up to year 10, but increase to 50-100,000 m^3 of roundwood in year 10-25. After year 27, the softwood planted under the project would come into production, yielding up to 200,000 m^3 per year of incremental roundwood.

5.04 Fuelwood and Poles. Production increases from farm forestry would depend on the species planted, and would be in the form of increased fuelwood and pole production, increased fodder or forest production, and increased production of other crops due to improvement in soil fertility and more time for crop cultivation due to less time spent in fuelwood collection. In order to simplify the analysis, it has been assumed that all seedlings from the farm forestry component would be used either for fuelwood (70%) or poles (30%). Annual incremental production would increase from 270,000 stacked m^3 of fuelwood and 1.7 million poles in year 6 to 950,000 stacked m^3 of fuelwood and 5.5 million poles in year 9. Anuual incremental production would continue at about this level, though fluctuating until year 30, assuming 6 coppices under a four-year cycle. This assumes a Mean Annual Increment (MAI) of 18.21 m^3 per ha per year.

5.05 Incremental yields from the peri-urban component are estimated at 10-16,000 stacked m^3 of fuelwood and 1 million poles per year from the plantations. From the private farmers they are estimated to be similar. Yields (MAIs) are assumed to be 50% higher than with farm forestry.

B. Markets and Prices

5.06 All wood products in Uganda are freely traded, with the price determined by market forces. Reliable data on market prices are not available, but there are wide regional fluctuations. The limited information which is available suggests that while sawn timber price changes have been more rapid than inflation over the past two years, charcoal and fuelwood prices have not.

5.07 Retail prices for good quality hardwood (mahoganies, Chlorophoras) averaged U Sh 475,000 per m^3, and U Sh 380,000 per m^3 for Class 2 hardwoods at appraisal. Data were not available for softwoods (except cypress whose price was similar to good quality hardwoods). Uganda used to export plywood, veneer and high quality sawn timber. At present, exports are minimal, and should not be promoted until quality control and grading mechanisms are re-introduced. There may, however, be scope for export of high grade timber products to Kenya and beyond. There is also scope for export of sawn timber to Rwanda, and a substantial proportion of the softwood resource base is not far from the border. Charcoal prices varied at appraisal from U Sh 7,000 per 25 kg bag (excluding the sack) in town, to U Sh 3,000-U Sh 4,000 on the roadside. Fuelwood prices varied very widely, from U Sh 15-25,000 per stacked m^3 in Kampala, to U Sh 3-5,000 at the roadside in rural areas.

5.08 Given the lack of information about recent changes in price or quantity of traded wood products, it is very difficult to make any market forecasts. It is clear from the limited information that is available (para. 1.19) that there is substantial unmet demand in Uganda for sawn timber. Demand would have doubled since 1970 to 150,000 m^3 in 1985, rather than the estimated 83,000 m^3, had the economy not been disrupted by political strife. The situation regarding market information should improve over the next years as a result of:

(i) The charcoal marketing and household energy surveys and the national biomass inventory to be financed under the Second Power Project;

(ii) The Uganda timber and timber products market study to be financed under this project. This study will examine the scope for production and export of mechanical (sawn timber, plywood, veneer, furniture, etc.) and chemical (pulp and paper) wood products; and

(iii) The forest inventory to be financed under the project.

VI. FINANCIAL IMPLICATIONS

6.01 The project would provide the means for making forestry a significant source of cash for the country's Treasury. The sources of revenue for the FD are royalties and license fees for logging, fuelwood cutting and charcoal burning activities from public land. In the 1960s these royalties were calculated on the basis of residual stumpage, after allowing for harvesting and milling costs, and were regularly adjusted. Although revenues accrued to the Treasury, they went a substantial way to defraying the costs of the Forestry Administration. Royalties for Class 1 hardwoods in the early 1970s, if this had been adjusted for inflation, would be equivalent to U Sh 37,500 per m^3 in 1986 prices. Over the past 15 years, royalty adjustment has lagged seriously behind inflation. Royalties are currently U Sh 3,000 per m^3 for Class 1 hardwoods and U Sh 1,020 per m^3 for class 2 hardwoods. These figures represent well under 1% of the selling price for sawn timber. The low levels have two disadvantages: first, they result in loss of revenue for the government, and second, by underpricing wood, they provide little incentive for millers to use the resource efficiently, and result in unnecessary waste and destruction of the forest resource. Furthermore, even these royalties are rarely collected, since FD officials lack the transport to go to the forests, the instruments to measure sawlog volume, and the paper on which to record receipts.

6.02 Under the project, it is proposed to restore royalties to levels approaching those prevailing in the early 1970s in real terms. This would be achieved by the strict enforcement of the FD's standing orders for collection of revenue and increased staff mobility with the vehicles provided under the project, as well as expected improvement in field staff morale ethic due to provision of uniform, subsistence allowance and out-of-pocket expenses. Moreover, incentive for revenue collection would be in the form of opportunities for career development through promotion of those staff achieving targets for revenue collection.

6.03 Logging and milling costs cannot at present be calculated. Royalties would therefore be set as a percentage of (market determined) retail prices for sawn timber similar to that of the early 1970s, and adjusted every six months in line with retail price changes. The royalty proposed for Class 1 hardwoods is 15% of the selling price, or, assuming a 40% recovery, a royalty equivalent to 6% of the retail price of sawn timber. At appraisal retail, sawn timber prices averaged U Sh 475,000 per m^3; thus the appropriate royalty would be U Sh 28,500. This is lower than the royalty level calculated based on residual stumpage, based on inadequate information of U Sh 34,000. The royalty proposed for Class 2 hardwoods is 10% of the selling price, or U Sh 15,000 per m^3 assuming 40% recovery (i.e., 4% of the retail price of sawn timber), and for softwoods and Class 3 hardwoods it is 7% assuming 30% recovery. The low rates for these timber categories are to encourage millers to exploit the softwood plantations and use the less valuable hardwood species.

6.04 Licensing arrangements for charcoal burners would also be modified. Licenses are currently granted annually for U Sh 50,000, with no limit to the amount of charcoal burnt or the number of employees. The license fees would be revised to represent the equivalent of a roadside selling price of three bags of charcoal per month (7.5% of the average

monthly production of a charcoal burner), or given the present prices, U Sh 12,000 per month, and adjusted every six months in line with inflation. The level of fees proposed is similar to license fees prevailing in the late 1960s, which was based on charcoal production cost estimates.

6.05 Revisions are also proposed in royalty levels for fuelwood and poles from public land, but since these form a much smaller proportion of revenue potential, agreement on their levels would be reached through the AWP mechanism.

6.06 Government has completed an interim adjustment of royalty levels for Class 1 hardwoods to 8%, for Class 2 hardwoods and cypress to 5%, and for softwoods and Class 3 hardwoods to 4% of the retail selling price; and adjustment of charcoal license fees to 7-1/2% of the retail value of the average monthly charcoal production from each individual charcoal burner. Assurances were obtained prior to negotiations that further adjustment of royalty levels for the three categories of timber to 15%, 10% and 7%, respectively, would be made by December 31, 1988 [para. 8.01(v)]. The Government has designed and established an administrative arrangement that would ensure adjustment of royalty and charcoal license rates every six months in line with inflation.

6.07 Revenues accruing to the Government, assuming adjustment of royalties to the levels proposed, are indicated in Annex 5, Table 1. On the assumption that collection rates increase from 10% in Year 1 to a maximum of 60% in Year 4, revenues would average U Sh 69 billion per year after Year 6 of the project, compared with recurrent and replacement costs of U Sh 23 billion per year (expressed in 1993 prices). In order for revenues to fall below recurrent costs, revenue collection level would have to fall below 30%. A major element of project activities is to provide the FD with the means to manage the forest resources effectively, including royalty collection. It may safely be assumed that royalty collection level would be well above 30%.

6.08 The project's fiscal impact has been calculated, including Government contribution to project costs, interest charges to IDA, and replacement costs. Government's cash flow is indicated in Annex 5, Table 2 and is positive after the second year with substantial revenue source to compensate the Government's contribution of US$3.4 M towards project cost, as well as recurrent cost after project completion.

Farm Model

6.09 A farm model has been prepared only for the peri-urban component (Annex 5, Table 3). For farm forestry, where woodlots or poles are produced, the model would be similar to that for peri-urban areas. However, there would in fact be such variations in the species planted, the method of planting (in rows, as woodlots, isolated, interplanted with food crops, etc.), and their use, that there is little benefit in producing a farm model. Establishment costs are more than offset in the first year from revenues from foodcrops interplanted with seedlings, and benefits from fuelwood and poles are recouped from Year 4. The net present value of woodfarming on 1 hectare to the farmer, at 10% interest, is U Sh 7.6 million over a 25-year period.

VII. BENEFITS, RATE OF RETURN AND RISKS

7.01 Most benefits from the project cannot be quantified. The main benefit would be establishment of the institutional base for managing Uganda's forest resources in an ecologically sound way, while at the same time ensuring sufficient production of wood products to meet the countries' needs. It is this management benefit, rather than direct production benefit, that is the main objective of the project. Improved protection of unique flora and fauna in the natural forests is an important unquantifiable benefit.

7.02 Reduced time spent by women in collecting firewood from far afield is a key benefit of the farm forestry component. Time saved would yield social benefits, through increased time available for child-care and household tasks. It would also yield eonomic benefits, through increased time available for crop cultivation, better weed control and higher yields. Pole production would also result in reduced time spent gathering (often poor quality naturally growing) poles, and less frequent replacement of houses through use of stronger poles. The end result would also be more time available for care of crops.

7.03 An attempt has been made, nevertheless, to calculate an ERR for the project, taking into account those elements which can be quantified. These include:

(i) increased timber production due to: new planting (in the plantations and from enrichment in the natural forests); thinning (i.e., the plantations and natural forests); reduced losses from fire and wind throw in the plantations; and efficiency gains from improvement in logging from improved management and control of logging activities;

(ii) increased charcoal production from controlled felling activities in the natural forests; and

(iii) increased fuelwood and pole production from farm forestry and peri-urban wood farming.

7.04 Timber was valued at the export parity price to Kenya, although the great bulk of increased production would be for local consumption. Fuelwood, pole and charcoal production were valued at their stumpage value based on roadside prices, although the great majority of production would be in rural areas from farm forestry activities, and would not be marketed. All costs were included in the analysis except for training, research and studies costs. Recurrent costs such as staff salaries and operating expenses and replacement costs of vehicles and equipment were computed. The project life was assumed to be 36 years, to allow for timber trees planted during the project to grow to harvestable age. Local costs have not been adjusted by a standard conversion factor since the recently announced official exchange rate is almost equal to market exchange rate through the devaluation in May 1987 from US$1 = U Sh 1,400 to US$1 = U Sh 6,000. The economic rate of return has been calculated for the

project, as a whole, and by project components for which benefits could be quantified. Assumptions, costs and benefits streams are detailed in Annex 4, Tables 1, 2 and 3.

7.05 The economic rate of return for the entire project is estimated at 15%. Sensitivity tests are detailed in Annex 4, Table 3. They illustrate that costs could go up by 37% or benefits fall by 27%, for the project to achieve an ERR of 10%. If benefits are delayed one year, the ERR would fall to 13%. Individual ERR for the components are: natural forest management 45%; softwood plantation rehabilitation 51%; and pilot peri-urban and private wood farming 7%. The latter component is of a pilot nature with total costs of US$0.8 M.

Risks

7.06 There are relatively few technical risk to the project. The trees to be grown have been for the most part widely cultivated in Uganda, and have proved successful. Relative to other production oriented projects, the project is less vulnerable to constraints inherent in the current macroeonomic environment.

7.07 Delay in project implementation due to weak implementation capacity and lack of donor coordination is the main risk. The Forestry Service Staff have become demoralized following over ten years of inactivity and insufficient resources with which to work. The project minimizes this risk through providing FD staff with equipment, vehicles, operating costs, overnight allowances and accommodation. Technical assistance for procurement should ensure that these goods arrive promptly. Furthermore, the refresher training course through the project period, and training provided through technical assistance, should help to restore morale and productivity. The establishment of a Project Coordination Committee would strengthen monitoring of project implementation, besides fostering better donor coordination.

7.08 The second major risk is that after the project period, the Government will not allocate sufficient funds to the FD to ensure continued implementation of activities. This risk is inherent in most projects. Since, however, revenues to the Treasury from royalty collection are substantially greater than the recurrent costs of running a restored FD, it is in Government's interest to continue to support forestry activities. Furthermore, the project sets up the institutional mechanism to ensure sustainability by strengthening the FD and its renevenue collection capacity, initiating forest management programs and providing the planning basis for long-term management of Uganda's forestry resources. Security is not a major risk as the planting activities are not located in areas experiencing extensive civil war.

VIII. AGREEMENTS REACHED

8.01 During negotiations, assurances were obtained that:

(i) The Government would formally adopt the Forest Policy Statement by December 31, 1987, and amend, if required, the existing forestry legislation by June 30, 1988 ((para. 2.27);

(ii) Audited accounts and report would be sent to IDA within six months of the close of the fiscal year (para. 3.13);

(iii) Counterpart staff for planning, procurement and financial management acceptable to IDA, would be provided (para. 4.02);

(iv) Annual work program satisfactory to IDA would be finalized and that the execution of the project would be carried out with due regard to ecological and environmental factors consistent with Government policy on Forest Resource Management (para. 4.08);

(v) A mid-term review of the project would be undertaken no later than March 31, 1990 (para. 4.12); and

(vi) By December 31, 1988, royalty rates would be increased for Class 1 hardwood to 15%, for Class 2 hardwood and cypress to 10%, and for Class 3 hardwood and softwood to 7% of the retail selling price (para. 6.06); and

(vii) By September 30, 1988, all measures necessary would be taken to ensure that forest harvesting licenses issued would include provision for the use of logging and milling equipment in conformity with sound forest management practices (para. 4.09).

8.02 The following are conditions of credit effectiveness:

(i) Execution of cofinancing agreements with the respective cofinanciers (para. 3.03);

(ii) Establishment of (a) a project account with an initial deposit of U Sh 750 M, and (b) a special account in foreign exchange to receive and disburse IDA's contribution towards the project cost (para 3.12);

(iii) Establishment of a project coordinating committee (para. 4.01); and

(iv) Reorganize the FD and submit a staffing plan (para. 4.03);

(v) Formal reinstatement of forest guards in the staff establishment (para. 4.07); and

8.03 With the above assurances and covenants, the project would be suitable for an IDA credit for SDR 10.0 million (US$13.0 million equivalent) to GOU.

Annex 1

UGANDA

FORESTRY REHABILITATION PROJECT

Estimated Schedule of Disbursements 1/
(US$ millions)

IDA Fiscal Year	Quarter Ending	Disbursements at End of Quarter	Cumulative
1988	September 1987	-	-
	December 1987	-	-
	March 1988	0.2	0.2
	June 1988	0.2	0.4
1989	September 1988	0.3	0.7
	December 1988	0.3	1.0
	March 1989	0.5	1.5
	June 1989	0.6	2.1
1990	September 1989	0.5	2.6
	December 1989	0.5	3.1
	March 1990	0.6	3.7
	June 1990	0.7	4.4
1991	September 1990	0.7	5.1
	December 1990	0.7	5.8
	March 1991	0.6	6.4
	June 1991	0.7	7.1
1992	September 1991	0.6	7.7
	December 1991	0.7	8.4
	March 1992	0.6	9.0
	June 1992	0.6	9.6
1993	September 1992	0.5	10.1
	December 1992	0.6	10.7
	March 1993	0.4	11.1
	June 1993	0.5	11.6
1994	September 1993	0.3	11.9
	December 1993	0.3	12.2
	March 1994	0.2	12.4
	June 1994	0.3	12.7
1995	September 1994	0.2	12.9
	December 1994	0.1	13.0

1/ Expected date of signing: July 1987
Expected date of effectiveness: October 1, 1987
Expected completion date: June 30, 1994
Closing date: December 31, 1994

UGANDA

FORESTRY REHABILITATION PROJECT

Detailed Costs of PPF Activities

Planning and Management Support	Cost US$(000)
Project Coordinator (9 manmonths)	90
Financial Controller (3 manmonths)	30
Senior Forest Planner (9 manmonths)	90
Procurement Manager (9 manmonths)	90
Building Supervisor (3 manmonths)	30
3 FWD vehicles (US$10,000 each)	30
Vehicle operating costs	9
Subtotal	369
Preliminary Transport Equipment	
2 4WD vehicles (1000 cc) (US$11,000)	22
18 motorcycles (US$1,650)	84
36 bicycles (US$140)	5
Vehicle operating costs	5
Motorcycle operating costs	13
	129
Preliminary Field Equipment	
Nursery equipment: 75 units a/ (US$76)	6
Measuration equipment: 30 units b/ (US$640)	19
Forest activity equipment: 600 units c/ (US$22)	13
	38

a/ Includes 4 hoes, 2 watering cans, 2 trowels, 7 kg polythene tubing.
b/ Includes 2 compasses, 2 diameter tapes, 20 10-meter taps, 2 clinometers and marketing equipment.
c/ Hoes, pangas, files, axes, etc.

		Cost (US$000)
Preliminary Office Equipment		
5 typewriters (US$580)		3
20 desk calculators (US$18)		3.5
1 duplicating machine (US$500)		0.5
6 office furniture sets (US$380)		2
2 personal computers		10.0
1 zerox machiner		5.0
		24.0
Repairs to Office		25.0
	Subtotal	216.0
Start-up Social Forestry Activities		
a) **Vehicles**		
3 large 4-WD station wagons		49.5
Spares @ 20%		10.0
		59.5
b) **Operating Cost**		30.0
	Subtotal	89.5

UGANDA

FORESTRY REHABILITATION PROJECT

Forest Inventory	Cost US$(000)
a) Vehicles and Equipment	
3 4WD station wagons (US$11,000)	33
2 4WD pickups (US$11,000)	22
Spares (20%)	10
20 tents (US$130)	2.6
60 sleeping bags (US$66)	4
20 compasses (US$40)	0.8
20 clinometers (US$35)	0.7
20 diameter tapes (US$20)	0.4
30 10-m tapes (US$23)	0.7
20 survey chains (US$35)	0.7
2 chain saws (US$600)	1.2
Miscellaneous tools and equipment	1.2
2 desktop computers (512 K) (US$11,000)	22
Software	6.6
Miscellaneous drafting equipment a/	1.7
Satellite imagery b/	19.4
Aerial photography c/	55
	182.0
b) Recurrent Costs	
Vehicle O&M	25
Overnight allowances	50
Labor	5
Materials	5
	85
c) Technical Assistance: 12 manmonths	120
d) Biomass Inventory Consultant	15
Subtotal	402

a/ Includes 2 mirror stereoscopes and 5 pocket stereoscopes.
b/ A set consists of 14 plates covering the entire country (US$120/plate).
c/ Costed in Nairobi US$5/sq km. Approximately 700,000 ha need to be covered including marginal high forest areas.

Timber Marketing Study		Cost US$(000)
a) Mechanical wood products market analyst (4 manmonths)		48
b) Pulp market analyst (3 manmonths)		36
c) Inventory of log milling and logging equipment (2 man-months)		24
	Subtotal	108
Training: Rehabilitation of Nyabyeya Forest School:		
a) Miscellaneous repairs and equipment		9
b) 30-seater bus		30
c) Four-WD pickup		15
	Subtotal	50
Contingencies	Subtotal	15.5
	Total	1,250

Annex 2
Table 2

UGANDA

FORESTRY REHABILITATION PROJECT

Inflation and Exchange Rate Assumptions

	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
International Inflation (%)	10.4	3.0	1.0	1.0	1.0	3.5	3.5
Domestic Inflation (%)	277.8	87.4	24.3	14.4	10.0	10.0	10.0
Constant Purchasing Parity Exchange Rate	6,000	6,842	8,404	9,516	10,323	10,995	11,679

Annex 3
Table 1

UGANDA
UGANDA FORESTRY REHABILITATION PROJECT
SUMMARY ACCOUNTS COST SUMMARY

	(U. Sh. Million)					(US$ '000)				
	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs
I. INVESTMENT COSTS										
A. CIVIL WORKS										
1. BUILDINGS	263.7	2,438.2	2,701.9	90	2	43.9	406.4	450.3	90	2
2. HOUSING	1,574.5	14,560.7	16,135.2	90	11	262.4	2,426.8	2,689.2	90	11
3. OTHER CIVIL WORKS	525.8	2,829.9	3,355.7	84	2	87.6	471.7	559.3	84	2
Sub-Total CIVIL WORKS	2,363.9	19,828.9	22,192.8	89	15	394.0	3,304.8	3,698.8	89	15
B. PLANTATION ESTABLISHMENT	4,698.3	-	4,698.3	-	3	783.0	-	783.0	-	3
C. VEHICLES	6,661.9	22,020.9	28,682.8	76	19	1,010.2	3,671.2	4,681.5	78	19
D. EQUIPMENT	1,132.0	11,708.7	12,840.7	91	9	188.7	1,951.4	2,140.1	91	9
E. FURNITURE	298.0	612.9	906.9	67	1	48.3	102.2	151.5	67	1
F. TECHNICAL ASSISTANCE	3,863.0	29,954.1	33,817.1	89	22	610.5	4,925.7	5,536.2	89	22
G. TRAINING	2,881.4	1,806.2	5,487.6	29	4	843.6	287.7	911.3	29	4
H. MATERIALS	456.5	4,674.3	5,130.8	91	3	76.1	779.1	855.1	91	3
Total INVESTMENT COSTS	22,533.1	90,012.0	112,545.1	80	76	3,755.5	15,002.0	18,757.5	80	76
Physical Contingencies	1,887.0	8,045.8	7,932.8	76	5	314.5	1,907.6	1,322.1	76	5
Price Contingencies	49,618.9	54,651.0	104,269.9	52	71	3,844.7	998.1	4,842.9	21	19
Total INCLUDING CONTINGENCIES	74,038.9	150,708.8	224,747.8	67	152	7,714.7	17,907.8	24,722.5	88	100
II. RECURRENT COSTS										
A. MATERIALS	99.8	855.0	954.8	90	1	16.8	142.5	159.1	90	1
B. OPERATIONS & MAINTENANCE										
1. VEHICLE O & M	3,322.2	21,285.1	24,607.2	86	17	553.7	3,547.5	4,101.2	86	17
2. EQUIPMENT O & M	80.8	562.4	823.2	90	0	10.1	83.7	103.9	80	0
3. BUILDING O & M	1,641.6	800.4	2,542.1	35	2	273.8	150.1	423.7	25	2
Sub-Total OPERATIONS & MAINTENANCE	5,024.8	22,747.8	27,772.8	82	19	837.5	3,781.3	4,628.8	82	19
C. CASUAL LABOR	688.5	-	688.5	-	0	114.7	-	114.7	-	0
D. STAFF ALLOWANCES	5,872.2	-	5,872.2	-	4	978.7	-	978.7	-	4
Total RECURRENT COSTS	11,685.2	23,602.8	35,288.1	67	24	1,947.5	3,933.8	5,881.4	67	24
Physical Contingencies	1,188.5	2,380.3	3,528.8	67	2	194.8	393.4	588.1	67	2
Price Contingencies	26,433.0	18,765.8	46,198.8	43	31	1,780.2	337.3	2,117.5	16	9
Total INCLUDING CONTINGENCIES	39,286.8	45,728.9	85,015.8	54	58	3,922.5	4,664.4	8,587.0	54	35
Total BASELINE COSTS	34,218.3	113,614.8	147,833.2	77	100	5,703.0	18,935.8	24,638.9	77	100
Physical Contingencies	3,055.5	8,406.1	11,461.8	73	8	508.3	1,401.0	1,910.3	73	8
Price Contingencies	76,051.9	74,416.8	150,468.7	49	102	5,424.9	1,325.4	6,750.3	20	27
Total PROJECT COSTS	113,325.7	196,437.8	308,763.5	63	210	11,637.2	21,672.2	33,309.5	65	135

UGANDA
UGANDA FORESTRY REHABILITATION PROJECT
Project Components by Year
(U. Sh. Million)

	Base Costs							Total	
	0	1	2	3	4	5	6	U. Sh.	(US$ '000)
A. ENERGY FARMING									
1. PERI-URBAN FUELWOOD/POLE PLANTATION REHABILITATION/IMPF	-	2,258.3	337.5	388.2	950.8	535.8	561.0	4,632.8	772.1
Sub-Total ENERGY FARMING	-	2,258.3	337.5	388.2	950.8	535.8	561.0	4,632.8	772.1
B. FARM FORESTRY									
1. UFB TAKEOVER OPERATION	14.5	3,741.8	3,885.2	3,538.7	3,885.5	4,144.8	5,356.3	24,648.8	4,108.3
2. NGO ACTIVITIES	1,010.8	2,260.2	2,262.5	2,230.3	2,783.8	2,911.2	2,481.1	15,950.7	2,658.5
3. AGROFORESTRY DEMONSTRATION CENTERS	-	192.9	14.7	15.4	15.3	9.8	7.9	215.8	36.0
Sub-Total FARM FORESTRY	1,025.1	6,094.8	6,162.4	5,875.4	6,784.7	7,065.7	7,827.3	40,816.4	6,802.7
C. NATURAL FOREST MANAGEMENT REHABILITATION									
1. NATURAL FOREST MANAGEMENT	-	5,220.5	4,242.1	4,405.8	4,728.4	3,510.4	3,411.8	25,529.8	4,255.0
2. NATURAL FOREST CONSERVATION	-	769.8	808.2	870.1	708.1	868.8	732.1	4,374.2	729.0
3. FOREST INVENTORY	1,947.2	883.5	427.3	10.6	6.8	-	-	3,277.5	546.3
Sub-Total NATURAL FOREST MANAGEMENT REHABILITATION	1,947.2	6,853.8	5,575.8	5,086.8	5,454.4	4,120.1	4,143.8	33,181.7	5,530.3
D. INDUSTRIAL SOFTWOODS PLANTATION REHABILITATION	-	2,833.9	1,802.1	1,825.8	1,819.5	1,334.4	1,348.0	11,161.8	1,860.3
E. FOREST DEPARTMENT REHABILITATION									
1. LOGISTICAL SUPPORT	826.8	9,199.2	4,532.3	2,284.7	2,757.0	3,200.3	7,454.3	30,256.8	5,042.8
2. PLANNING AND MANAGEMENT	2,713.8	3,352.5	3,182.8	2,880.3	845.5	173.3	173.3	13,512.3	2,252.1
3. RESEARCH	-	848.7	478.9	186.3	181.2	184.9	94.0	1,655.0	275.8
Sub-Total FOREST DEPARTMENT REHABILITATION	3,542.6	13,200.4	8,175.8	5,441.4	3,803.7	3,538.5	7,721.6	45,423.9	7,570.7
F. TRAINING									
1. REHABILITATION OF NYABEYEYA FOREST COLLEGE	519.5	2,682.1	1,370.9	933.1	1,003.2	885.2	1,059.4	8,458.7	1,409.9
2. WOOD UTILIZATION - NAKAWA	-	2,107.0	1,151.7	704.8	81.0	78.0	58.8	4,157.2	692.8
Sub-Total TRAINING	519.9	4,789.1	2,522.8	1,637.8	1,084.2	961.3	1,112.3	12,616.9	2,102.8
Total BASELINE COSTS	7,034.7	36,040.4	24,357.0	20,055.8	19,277.4	17,955.9	22,712.1	147,833.2	24,638.8
Physical Contingencies	322.2	2,818.6	1,870.2	1,378.0	1,378.7	1,523.3	2,074.5	11,481.6	1,910.3
Price Contingencies	211.4	10,865.0	18,214.8	21,626.9	26,376.3	28,380.7	43,711.3	150,486.7	6,780.3
Total PROJECT COSTS	7,568.3	50,722.1	44,241.9	43,060.8	47,232.4	48,438.9	68,498.2	308,783.5	33,308.5
Taxes	41.7	325.1	514.0	633.7	725.8	800.2	902.2	3,863.0	605.0
Foreign Exchange	6,068.1	38,944.3	30,358.7	27,397.8	28,083.1	26,802.7	38,883.3	198,437.8	21,672.2

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UGANDA
UGANDA FORESTRY REHABILITATION PROJECT
Project Components by Year

	Totals Including Contingencies (U. Sh. Million)								Totals Including Contingencies (US$ '000)							
	0	1	2	3	4	5	6	Total	0	1	2	3	4	5	6	Total
A. ENERGY FARMING																
1. PERI-URBAN FUELWOOD/POLE PLANTATION REHABILITATION/IMPF	-	3,209.3	853.6	874.4	1,352.4	1,456.7	1,884.8	9,233.3	-	469.1	77.6	91.9	131.0	132.7	144.3	1,046.7
Sub-Total ENERGY FARMING	-	3,209.3	853.6	874.4	1,352.4	1,456.7	1,884.8	9,233.3	-	469.1	77.6	91.9	131.0	132.7	144.3	1,046.7
B. FARM FORESTRY																
1. UFD TAKEOVER OPERATION	17.9	5,525.5	7,741.8	8,502.2	10,434.7	12,120.1	15,714.0	61,056.1	3.0	807.6	921.2	893.5	1,010.6	1,102.3	1,431.1	6,169.2
2. NGO ACTIVITIES	1,149.4	2,953.3	4,120.2	4,746.7	5,406.7	7,198.4	8,770.9	33,343.5	191.8	431.7	490.3	498.8	620.5	654.5	579.7	3,467.0
3. AGROFORESTRY DEMONSTRATION CENTERS	-	211.9	35.4	43.6	49.0	35.2	31.5	406.7	-	31.0	4.2	4.6	4.7	3.2	2.7	50.4
Sub-Total FARM FORESTRY	1,167.3	8,690.7	11,897.3	13,292.6	15,890.3	19,351.7	23,516.4	94,806.2	194.5	1,270.3	1,415.7	1,396.8	1,635.9	1,760.0	2,013.5	9,686.7
C. NATURAL FOREST MANAGEMENT REHABILITATION																
1. NATURAL FOREST MANAGEMENT	-	7,179.0	7,832.2	9,716.4	11,919.2	10,396.8	11,347.7	58,391.3	-	1,049.3	931.9	1,021.1	1,154.4	945.6	971.6	6,073.9
2. NATURAL FOREST CONSERVATION	-	946.4	1,524.9	1,252.3	1,488.8	1,368.0	1,856.3	8,416.7	-	138.3	181.4	131.6	142.3	124.4	158.9	877.0
3. FOREST INVENTORY	2,141.5	1,251.2	873.4	21.5	19.7	-	-	4,307.3	356.9	182.9	103.9	2.3	1.9	-	-	647.9
Sub-Total NATURAL FOREST MANAGEMENT REHABILITATION	2,141.5	9,376.5	10,230.4	10,990.2	13,407.7	11,764.8	13,204.0	71,115.3	356.9	1,370.5	1,217.3	1,154.9	1,298.6	1,070.0	1,130.5	7,598.8
D. INDUSTRIAL SOFTWOODS PLANTATION REHABILITATION	-	4,943.0	2,953.9	3,576.7	4,053.1	3,919.6	4,412.7	23,859.0	-	722.5	351.5	375.9	392.5	356.5	377.8	2,576.7
E. FOREST DEPARTMENT REHABILITATION																
1. LOGISTICAL SUPPORT	937.1	13,002.3	7,881.3	4,674.9	6,193.4	7,977.2	21,010.2	61,776.5	156.2	1,900.5	949.7	491.3	599.6	725.5	1,798.9	6,621.9
2. PLANNING AND MANAGEMENT	2,792.3	4,201.3	5,026.5	5,468.0	1,909.0	379.5	417.3	20,193.8	465.4	614.1	598.1	574.6	184.9	34.5	35.7	2,507.3
3. RESEARCH	-	898.0	814.7	327.2	229.8	389.8	257.8	2,917.2	-	131.3	96.9	34.4	22.3	35.5	22.1	342.4
Sub-Total FOREST DEPARTMENT REHABILITATION	3,729.4	18,101.5	13,822.5	10,470.1	8,332.3	8,746.5	21,685.2	84,887.6	621.6	2,645.8	1,644.7	1,100.2	807.0	795.5	1,856.7	9,471.5
F. TRAINING																
1. REHABILITATION OF NYABEYEYA FOREST COLLEGE	530.0	3,616.9	2,837.4	2,549.9	3,063.1	3,014.3	3,845.3	19,456.8	88.3	528.7	337.6	268.0	298.7	274.1	329.2	2,122.8
2. WOOD UTILIZATION - NAKAWA	-	2,784.2	1,846.8	1,306.8	133.4	184.4	149.7	6,405.3	-	406.9	219.7	137.3	12.9	16.8	12.8	806.5
Sub-Total TRAINING	530.0	6,401.0	4,684.2	3,856.8	3,196.6	3,198.6	3,995.0	25,862.2	88.3	935.6	557.4	405.3	309.6	290.9	342.1	2,929.2
Total PROJECT COSTS	7,568.3	50,722.1	44,241.9	43,080.8	47,232.4	48,439.9	68,498.2	309,783.5	1,261.4	7,413.8	5,284.3	4,525.0	4,574.8	4,405.5	5,854.9	33,309.5

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UGANDA
UGANDA FORESTRY REHABILITATION PROJECT
Financing Plan By Disbursement Category
(US$ '000)

	IDA		EEC		DANIDA		CARE		UNDP		Government		Total				
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	For. Exch.	Local (Excl. Taxes)	Duties & Taxes
A. CIVIL WORKS	1,446.2	30.9	1,841.7	39.4	1,391.2	29.7	-	-	-	-	0.0	0.0	4,679.1	14.0	3,865.2	813.9	-
B. VEHICLES	3,532.2	55.8	1,209.6	19.0	1,614.8	25.4	-	-	-	-	0.0	0.0	6,356.7	19.1	4,338.9	2,017.8	-
C. EQUIPMENT	1,774.3	62.6	650.8	23.0	407.7	14.4	-	-	-	-	0.0	0.0	2,832.8	8.5	2,367.8	465.0	-
D. TECHNICAL ASSISTANCE	2,741.2	43.5	1,064.8	16.9	1,682.9	26.9	-	-	797.5	12.7	0.0	0.0	6,295.8	18.9	5,194.2	1,101.6	-
E. TRAINING	75.6	4.4	9.8	0.6	-	-	177.3	10.2	1,488.7	84.8	-	-	1,731.4	5.2	310.8	1,420.6	-
F. MATERIALS	108.3	3.2	280.4	20.0	906.2	69.5	-	-	-	-	31.4	2.4	1,304.3	3.9	1,069.8	234.5	-
G. OPERATIONS & MAINTENANCE	2,708.3	45.0	1,018.3	16.9	965.1	16.0	-	-	-	-	1,331.0	22.1	6,020.6	18.1	4,495.5	1,120.1	405.0
H. ESTABLISHMENT & MAINTENANCE LABOR	424.2	21.4	930.2	46.9	402.3	20.3	-	-	-	-	226.0	11.4	1,982.6	5.9	-	1,982.6	-
I. STAFF ALLOWANCES	140.5	6.7	58.2	2.7	183.8	7.8	-	-	-	-	1,745.7	82.9	2,108.1	6.3	-	2,108.1	-
Total Disbursement	12,948.7	38.9	7,041.8	21.1	7,543.8	22.6	177.3	0.5	2,288.2	6.8	3,334.1	10.0	33,309.5	100.0	21,872.2	11,232.2	405.0

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Annex 3
Table 4

Annex 3
Table 101
Page 1

GHANA
GHANA FORESTRY REHABILITATION PROJECT
Table 101. ENERGY FARMING
PERI-URBAN FUELWOOD/POLE PLANTATION REHABILITATION
AND IPAF
Detailed Cost Table
(U.Sh. '000)

	Unit	Quantity								Unit Cost	Base Costs in $								Totals Including Contingencies (US$ '000)							
		0	1	2	3	4	5	6	Total		0	1	2	3	4	5	6	Total	0	1	2	3	4	5	6	Total
I. INVESTMENT COSTS																										
A. CIVIL WORKS																										
1. NURSERY REHABILITATION																										
2 HP PUMPS	set	-	5	-	-	-	-	-	5	4,700	-	4.7	-	-	-	-	-	4.7	-	5.6	-	-	-	-	-	5.6
WATERTANK (2000 l)	unit	-	5	-	-	-	-	-	5	3,800	-	3.7	-	-	-	-	-	3.7	-	4.3	-	-	-	-	-	4.3
POLYTHENE PIPING	unit	-	5	-	-	-	-	-	5	2,540	-	2.5	-	-	-	-	-	2.5	-	2.9	-	-	-	-	-	2.9
STORE/OFFICE	unit	-	5	-	-	-	-	-	5	4,085	-	3.4	-	-	-	-	-	3.4	-	4.1	-	-	-	-	-	4.1
OFFICE FURNITURE	each	-	5	-	-	-	-	-	5	1,440	-	1.2	-	-	-	-	-	1.2	-	1.6	-	-	-	-	-	1.6
Sub-Total NURSERY REHABILITATION											-	15.5	-	-	-	-	-	15.5	-	18.0	-	-	-	-	-	18.0
2. ROAD REHABILITATION	km	-	3	5	7	9	12	14	50	5,702	-	2.9	4.8	6.8	8.7	11.6	13.5	48.3	-	3.6	5.3	8.9	11.7	15.0	19.2	63.7
3. HOUSING CONSTRUCTION																										
FORESTY GUARD HOUSE	unit	-	12	-	-	-	-	-	12	12,376	-	26.8	-	-	-	-	-	26.8	-	29.5	-	-	-	-	-	29.5
FORESTER HOUSE	unit	-	4	-	-	-	-	-	4	66,021	-	61.9	-	-	-	-	-	61.9	-	72.8	-	-	-	-	-	72.8
FURNITURE, FG HOUSE	each	-	12	-	-	-	-	-	12	1,708	-	3.4	-	-	-	-	-	3.4	-	5.5	-	-	-	-	-	5.5
FURNITURE, F HOUSE	each	-	4	-	-	-	-	-	4	2,582	-	1.7	-	-	-	-	-	1.7	-	2.7	-	-	-	-	-	2.7
Sub-Total HOUSING CONSTRUCTION											-	91.8	-	-	-	-	-	91.8	-	111.8	-	-	-	-	-	111.8
Sub-Total CIVIL WORKS											-	110.2	4.8	6.8	8.7	11.6	13.5	155.6	-	134.1	5.3	8.9	11.7	15.0	19.2	188.3
B. VEHICLES & EQUIPMENT																										
72 HP TRACTOR	set	-	5	-	-	-	-	-	5	135,968	-	135.9	-	-	-	-	-	135.9	-	157.7	-	-	-	-	-	157.7
4 TON TIPPING TRAILER	set	-	5	-	-	-	-	-	5	48,725	-	48.5	-	-	-	-	-	48.5	-	57.3	-	-	-	-	-	57.3
MOTORCYCLES (125 cc)	each	-	5	-	-	5	-	-	12	10,185	-	10.2	-	-	10.2	-	-	20.4	-	11.8	-	-	12.5	-	-	24.3
DISC PLOUGH	set	-	1	-	-	-	-	-	1	12,295	-	2.3	-	-	-	-	-	2.3	-	2.8	-	-	-	-	-	2.8
BICYCLES	each	-	5	-	-	3	3	-	12	884	-	0.9	-	-	0.4	0.4	-	1.8	-	1.0	-	-	0.5	0.5	-	2.1
SPARES (20%)	each	-	-	-	-	-	-	-	-	-	-	35.0	-	-	2.1	0.1	-	40.2	-	55.8	-	-	4.7	0.2	-	70.7
Sub-Total VEHICLES & EQUIPMENT											-	230.1	-	-	12.8	0.5	-	241.4	-	288.2	-	-	17.8	0.8	-	304.7
C. PLANTATION ESTABLISHMENT																										
1. SEEDLINGS /a																										
F. D. PLANTINGS	g000 SEEDLINGS	-	300	450	450	450	225	225	2,700	28	-	4.9	7.6	7.6	7.6	8.6	8.6	44.2	-	6.7	11.1	11.8	11.7	14.1	14.6	69.8
PRIVATE DISTRIBUTION	g000 SEEDLINGS	-	-	150	300	600	900	1,050	3,000	28	-	-	2.5	4.9	9.8	14.7	17.2	48.1	-	-	3.7	7.7	15.7	24.2	28.2	88.6
Sub-Total SEEDLINGS /a											-	4.9	9.8	12.3	17.2	23.3	25.8	92.3	-	8.7	14.9	19.1	27.4	38.2	42.8	158.1
2. NURSERY EQUIPMENT /b	set	-	5	1	1	1	1	1	11	2,317	-	2.3	0.4	0.4	0.4	0.4	0.4	4.2	-	2.8	0.5	0.5	0.5	0.6	0.5	5.5
3. ESTABLISHMENT EQUIPMENT /c	set	-	5	1	1	1	1	1	11	8,230	-	8.5	1.1	1.1	1.1	1.1	1.1	12.1	-	8.1	1.4	1.5	1.5	1.5	1.5	15.5
4. ESTABLISHMENT LABOR /d	man-days	-	5,200	2,000	11,000	11,100	12,400	12,025	62,575	3	-	2.5	5.0	5.8	5.8	6.2	6.5	31.5	-	4.9	10.3	12.0	12.5	14.4	15.5	69.2
Sub-Total PLANTATION ESTABLISHMENT											-	18.4	16.3	19.3	24.3	31.1	33.8	141.1	-	22.2	27.0	33.1	41.8	54.7	61.4	248.2
Total INVESTMENT COSTS											-	354.7	21.1	26.1	48.7	43.2	47.3	538.1	-	442.5	33.3	62.1	71.3	71.6	80.7	741.3
II. RECURRENT COSTS																										
A. VEHICLE O & M																										
TRACTOR	hr	-	1,200	1,800	2,400	3,000	3,000	3,000	15,200	35	-	7.2	10.8	14.4	21.7	21.7	21.7	97.5	-	8.9	13.1	17.8	27.0	27.9	28.6	122.5
MOTORCYCLE	km	-	15,000	30,000	30,000	30,000	30,000	30,000	165,000	4	-	9.7	19.4	19.4	19.4	19.4	19.4	106.7	-	11.4	22.5	23.8	24.1	24.7	25.8	132.2
Sub-Total VEHICLE O & M											-	16.9	30.2	33.8	41.1	41.1	41.1	204.2	-	19.8	35.7	41.8	51.1	52.3	54.2	255.7
B. OTHER O & M																										
BUILDING	p.a.	-	-	-	-	-	-	-	-		-	2.6	2.6	2.6	2.6	2.6	2.6	15.6	-	4.0	4.8	4.8	5.0	5.1	5.3	28.9

ROAD MAINTENANCE LABOR	man-days	-	-	90	210	330	450	570	1,830	2	-	-	0.0	0.1	0.2	0.2	0.3	0.8	-	-	0.1	0.2	0.4	0.5	0.7	1.9
ROAD MAINTENANCE CONSUMABLES	kg	-	-	1	1	1	1	1	5	610	-	-	0.1	0.1	0.1	0.1	0.1	0.5	-	-	0.1	0.1	0.1	0.1	0.1	0.7
OFFICE CONSUMABLES	kg	-	0	0	0	0	0	0	35	2,130	-	2.2	2.2	2.2	2.2	2.2	2.2	13.0	-	2.7	2.9	3.0	3.1	3.1	3.2	18.1
Sub-total OTHER O & M											-	6.6	6.9	6.9	6.9	6.9	6.9	39.9	-	6.8	7.8	8.2	8.5	8.8	9.4	48.5
Total RECURRENT COSTS											-	21.7	35.1	23.8	46.1	46.1	46.2	224.1	-	26.8	46.5	48.8	38.7	81.3	83.8	325.3
Total											-	278.4	58.2	56.9	91.8	88.3	92.5	772.1	-	488.1	77.0	81.9	131.0	132.7	144.3	1,048.7

/a Cost per 1000 standings includes labor (ESh 15,000), tubes (117000), seed (12000), insecticide (20000). Refer Table 1, Annex 1.
/b Includes 10 hoes (ESh 63000), 2 pangas (20000), 8 trowels (16000), 5 watering cans, 4 shovels, 4 forks (72000), 4 pickaxes (62000), 2 wheelbarrows (372000), and 1 hammer. (Table 3, Annex 1, Working paper 1).
/c Includes 45 hoes, 3x30 m tapes (200000), 45 pangas, 25 shovels, 40 files (62000), 3 compasses (600000), and 8 bow saws (120000). See Table 4, Annex 1).
/d Refer Tables 1 & 2, Annex 1.

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UGANDA
UGANDA FORESTRY REHABILITATION PROJECT
Table 201. FARM FORESTRY
NGO ACTIVITIES
Detailed Cost Table
(U.Sh. '000)

	Unit	Quantity 0	1	2	3	4	5	6	Total	Unit Cost	Base Costs in $ 0	1	2	3	4	5	6	Total	Totals Including Contingencies (US$ '000) 0	1	2	3	4	5	6	Total
I INVESTMENT COSTS																										
A. NURSERIES																										
1. CORE NURSERY TOOLS, EQUIPMENT AND OFFICE SUPPLIES																										
OIL DRUM (WAGO)	each	50	50	50	50	50	50	-	300	130	1.1	1.1	1.1	1.1	1.1	1.1	-	6.8	1.2	1.3	1.4	1.4	1.4	1.4	-	8.1
GERRY CAN	each	100	150	100	100	100	100	-	600	20	0.3	0.3	0.3	0.3	0.3	0.3	-	2.0	0.4	0.4	0.4	0.4	0.4	0.4	-	2.4
HOE	each	100	100	100	100	100	100	-	600	17	0.3	0.3	0.3	0.3	0.3	0.3	-	1.7	0.3	0.3	0.3	0.3	0.3	0.4	-	2.0
RAKE	each	100	100	100	100	100	100	-	600	14	0.2	0.2	0.2	0.2	0.2	0.2	-	1.4	0.3	0.3	0.2	0.3	0.3	0.3	-	1.8
PANGA	each	100	100	100	100	100	100	-	600	10	0.2	0.1	0.2	0.2	0.2	0.2	-	1.0	0.2	0.2	0.2	0.2	0.2	0.2	-	1.1
WATERING CAN	each	125	125	125	125	125	125	-	750	34	0.7	0.7	0.7	0.7	0.7	0.7	-	4.2	0.8	0.8	0.8	0.9	0.9	0.9	-	5.1
SHOVEL	each	50	50	50	50	50	50	-	300	34	0.3	0.3	0.3	0.3	0.3	0.3	-	1.7	0.3	0.3	0.3	0.3	0.3	0.4	-	2.0
WHEELBARROW	each	50	50	50	50	50	50	-	300	288	2.4	2.4	2.4	2.4	2.4	2.4	-	14.3	2.7	2.8	2.8	2.9	2.9	3.0	-	17.0
RECORD BOOK	each	100	100	100	100	100	100	-	600	7	0.1	0.1	0.1	0.1	0.1	0.1	-	0.7	0.1	0.1	0.1	0.1	0.1	0.1	-	0.8
DISTRICT OFFICE EQUIPMENT	each	5	-	5	-	5	-	-	15	82	0.1	-	0.1	-	0.1	-	-	0.2	0.1	-	0.1	-	0.1	-	-	0.2
STATIONERY	each	5	5	5	5	5	5	-	30	600	0.6	0.6	0.6	0.6	0.6	0.6	-	3.6	0.6	0.7	0.7	0.7	0.7	0.7	-	4.1
Sub-Total CORE NURSERY TOOLS, EQUIPMENT AND OFFICE SUPPLIES											6.2	6.2	6.3	6.2	6.2	6.2	-	37.4	7.0	7.2	7.5	7.5	7.7	7.8	-	44.5
2. NURSERY KITS FOR OTHER NGOs																										
OIL DRUM (WAGO)	each	-	66	66	100	100	100	66	498	130	-	1.5	1.5	2.3	2.3	2.3	1.5	11.3	-	1.7	1.8	2.7	2.8	2.9	1.9	13.8
GERRY CAN	each	-	264	264	396	396	396	264	1,980	20	-	0.9	0.9	1.3	1.3	1.3	0.9	6.7	-	1.0	1.1	1.6	1.6	1.7	1.2	8.2
HOE	each	-	528	528	792	792	792	528	3,960	17	-	1.5	1.5	2.2	2.2	2.2	1.5	11.2	-	1.7	1.8	2.7	2.7	2.8	1.9	13.7
RAKE	each	-	132	132	198	198	198	132	990	14	-	0.3	0.3	0.4	0.4	0.4	0.3	2.2	-	0.3	0.4	0.5	0.5	0.6	0.4	2.7
PANGA	each	-	264	264	396	396	396	264	1,980	10	-	0.4	0.4	0.6	0.6	0.5	0.4	3.1	-	0.5	0.5	0.6	0.8	0.8	0.5	3.8
PLASTIC WATERING CAN	each	-	264	264	396	396	396	264	1,980	38	-	1.5	1.5	2.2	2.2	2.2	1.5	11.3	-	1.7	1.8	2.7	2.7	2.8	1.9	13.7
SHOVEL	each	-	132	132	198	198	198	132	990	34	-	0.7	0.7	1.1	1.1	1.1	0.7	5.5	-	0.8	0.8	1.4	1.4	1.4	1.0	6.8
WHEELBARROW	each	-	66	66	100	100	100	66	498	288	-	3.1	3.1	4.8	4.8	4.8	3.1	23.7	-	3.5	3.8	5.8	5.8	6.0	4.1	29.0
SLASHER	each	-	132	132	198	198	198	132	990	14	-	0.3	0.3	0.4	0.4	0.4	0.3	2.2	-	0.3	0.4	0.5	0.5	0.6	0.4	2.7
[illegible]	each	-	396	396	594	594	594	396	2,970	34	-	2.2	2.2	3.4	3.4	3.4	2.2	16.8	-	2.6	2.7	4.1	4.1	4.2	2.8	20.5
Sub-Total NURSERY KITS FOR OTHER NGOs											-	12.5	12.6	18.9	18.9	18.9	12.5	94.2	-	14.5	15.0	22.8	23.1	23.6	16.3	115.3
3. NURSERY INPUTS - CORE																										
PESTICIDES	each	30	30	60	120	180	240	300	960	130	0.5	0.5	1.0	2.7	4.1	5.4	6.8	21.6	0.5	0.5	1.7	3.3	5.0	6.8	8.8	25.7
FERTILIZER	each	45	45	144	270	405	540	675	2,124	14	0.2	0.2	0.8	1.5	2.3	2.1	3.8	12.0	0.2	0.2	1.0	1.9	2.8	2.8	3.8	15.0
POLYTHENE TUBES	each	535	985	2,225	4,185	6,250	8,335	10,415	32,780	48	3.5	3.5	17.8	33.0	48.8	66.1	82.6	260.0	6.1	6.4	21.1	60.0	80.7	82.6	107.1	324.2
Sub-Total NURSERY INPUTS - CORE											8.2	8.2	19.8	37.3	55.9	74.6	93.2	293.4	8.8	7.2	23.8	48.1	66.5	82.5	120.8	365.9
4. UNSKILLED LABOR, NURSERY OPERATION	man-months	1,800	1,800	3,000	1,800	3,000	1,800	3,000	16,000	35	18.9	18.9	21.7	18.9	21.7	10.8	21.7	168.7	13.4	18.8	44.8	23.5	48.5	25.1	31.9	228.0
5. INPUTS - NGO NURSERY KITS /a																										
PESTICIDES	each	-	88	88	142	142	142	88	723	130	-	2.2	2.2	3.2	3.2	3.2	2.3	18.4	-	2.5	2.7	3.8	3.9	4.0	2.9	24.1
FERTILIZER	each	-	212	212	318	318	318	212	1,590	38	-	1.2	1.2	1.8	1.8	1.8	1.2	9.0	-	1.4	1.4	2.2	2.2	2.2	1.5	11.0
POLYTHENE TUBES	each	-	330	330	495	495	495	330	2,475	48	-	2.6	2.8	2.9	3.8	3.9	2.6	18.6	-	3.0	3.1	4.8	4.8	4.9	3.4	24.0
Sub-Total INPUTS - NGO NURSERY KITS /a											-	6.1	6.1	8.9	8.9	8.9	6.1	45.0	-	7.0	7.2	10.8	10.9	11.2	7.9	55.1
Sub-Total NURSERIES											23.3	41.3	65.5	82.1	111.7	113.9	133.5	578.6	27.3	36.0	66.3	105.7	138.7	151.1	188.9	800.8
B. VEHICLES																										
4WD STATION WAGON	each	1	-	-	-	-	1	-	2	101,982	17.0	-	-	-	-	17.0	-	34.0	18.9	-	-	-	-	21.3	-	40.2
4WD PICKUP	each	2	-	-	-	-	2	-	4	101,982	34.0	-	-	-	-	34.0	-	68.0	37.9	-	-	-	-	42.8	-	80.5
4WD PICKUP (1000 cc)	each	2	-	-	-	2	-	-	4	67,975	22.7	-	-	-	22.7	-	-	45.3	25.3	-	-	-	27.7	-	-	53.0
MOTORCYCLES (100 CC)	each	15	-	15	-	15	-	-	45	10,120	25.5	-	25.5	-	25.5	-	-	76.5	28.4	-	30.5	-	31.2	-	-	90.1
BICYCLES	each	20	20	20	20	20	20	-	120	880	2.9	2.9	2.9	2.9	2.9	2.9	-	17.7	3.3	3.4	3.5	3.6	3.8	3.7	-	21.1
SPARES (20%)	each	-	-	-	-	-	-	-	-		30.4	0.6	5.7	0.6	10.2	10.8	-	48.3	25.2	1.0	11.7	1.3	22.6	14.9	-	68.9
Sub-Total VEHICLES											132.5	3.5	34.1	3.5	61.3	64.7	-	288.7	120.0	4.4	45.7	4.8	85.4	82.4	-	371.8

C. BUILDINGS/OFFICE EQUIPMENT																									
OFFICES/STORE/HOUSE	unit	-	4	-	4	-	4	-	12	12,378	-	8.2	-	8.2	-	8.2	-	24.6	-	9.8	-	10.4	-	10.8	- 31.1
FURNITURE																									
FOR OFFICE	each	-	4	-	4	-	4	-	12	1,448	-	1.0	-	1.2	-	1.0	-	2.9	-	1.5	-	1.7	-	1.8	- 5.0
PHOTOCOPY MACHINE	set	-	1	-	-	1	-	-	2	23,833	-	6.3	-	-	6.3	-	-	6.5	-	5.0	-	-	5.3	-	- 10.3
MISC. OFFICE EQUIPMENT	sum	-	4	-	4	-	4	-	12	2,388	-	2.3	-	2.3		2.3	-	6.9	-	2.6	-	2.7	-	2.8	- 8.2
Sub-Total BUILDINGS/OFFICE EQUIPMENT											-	15.8	-	11.5	6.3	11.5	-	43.1	-	18.9	-	14.8	5.3	13.5	- 54.6
D. TRAINING																									
KENYA OR OVERSEAS																									
STUDY TOURS	man-months	-	5	-	5	-	5		15	10,388	-	13.6	-	13.6	-	12.8	-	40.7	-	15.4	-	15.9	-	16.4	- 47.7
INSERVICE TRAINING																									
FORESTRY EXTENSION	man-months	-	100	100	100	100	100	100	600	604	-	10.1	10.1	10.1	10.1	10.1	10.1	80.4	-	17.4	20.7	21.8	22.5	23.2	24.0 - 129.6
Sub-Total TRAINING											-	23.8	10.1	23.8	10.1	22.8	10.1	101.1	-	32.8	20.7	37.8	22.5	39.5	24.0 - 177.3
E TECHNICAL ASSISTANCE (CARE)																									
1 SALARY/BENEFITS																									
PROJECT MANAGER	S/M	-	12	12	12	12	12	12	72	13,825	-	22.2	22.2	22.2	22.2	22.2	22.2	133.5	-	24.2	25.0	25.2	25.5	27.8	- 146.8
ASSISTANT PROJECT MANAGER	S/M	-	12	12	12	12	12	12	72	12,388	-	20.6	20.6	20.6	20.6	20.6	20.6	123.5	-	27.4	28.0	28.2	28.5	29.2	- 161.7
ENVIRONMENTAL MONITOR	S/M	-	6	12	12	12	12	12	66	12,388	-	20.9	20.6	20.6	20.6	20.6	20.6	123.0	-	20.8	23.0	23.2	23.8	23.2	- 158.8
VSO (3)	S/M	-	36	36	36	36	36	36	216	7,580	-	45.0	45.0	45.0	45.0	45.0	45.0	270.0	-	48.4	47.4	47.8	48.2	48.4	51.1 - 290.4
TRAINING OFFICER	S/M	-	12	12	12	12	12	12	72	2,083	-	6.0	6.0	6.0	6.0	6.0	6.0	36.0	-	6.3	7.5	7.8	8.1	8.4	8.7 - 46.8
SOCIOLOGIST	S/M	-	12	12	12	12	12	12	72	2,083	-	6.0	6.0	6.0	6.0	6.0	6.0	36.0	-	6.3	7.5	7.8	8.1	8.4	8.7 - 46.8
SUPPORT STAFF (5)	S/M	-	30	30	30	30	30	30	180	300	-	3.0	3.0	3.0	3.0	3.0	3.0	18.0	-	4.7	5.8	5.8	6.1	6.3	6.5 - 35.1
COMPUTER OPERATOR	S/M	-	12	12	12	12	12	12	72	1,002	-	2.0	2.0	2.0	2.0	2.0	2.0	12.0	-	3.1	3.8	3.9	4.1	4.2	4.3 - 23.4
Sub-Total SALARY/BENEFITS											-	127.8	144.5	144.5	144.5	144.5	144.5	850.1	-	143.2	152.7	158.2	167.5	171.6	177.5 - 983.8
2 HOUSING ALLOWANCES																									
PROJECT MANAGER	man-months	-	12	12	12	12	12	12	72	3,888	-	12.0	12.0	12.0	12.0	12.0	12.0	72.0	-	18.8	22.5	23.8	24.2	25.1	26.0 - 140.4
PROJECT ASSISTANT	man-months	-	12	12	12	12	12	12	72	2,000	-	4.0	4.0	4.0	4.0	4.0	4.0	24.0	-	6.3	7.5	7.8	8.1	8.4	8.7 - 46.8
ENVIRONMENTAL MONITOR	man-months	-	6	12	12	12	12	12	66	4,788	-	7.2	8.8	8.8	8.8	8.8	8.8	53.2	-	11.3	18.0	18.9	19.5	20.1	20.8 - 108.8
VSO (3)	man-months	-	36	36	36	36	36	36	216	888	-	5.4	5.4	5.4	5.4	5.4	5.4	32.4	-	8.5	10.1	10.6	11.0	11.3	11.7 - 63.2
Sub-Total HOUSING ALLOWANCES											-	28.8	31.0	31.0	31.0	31.0	31.0	183.8	-	45.0	58.0	60.8	62.8	65.8	67.3 - 359.0
3 PLANE FARES	sum	-	-	-	-	-	-	-	-		-	8.3	8.8	8.8	8.8	8.8	8.8	54.0	-	9.3	8.5	8.8	8.7	8.9	9.2 - 52.1
4 OTHER ALLOWANCES	sum	-	-	-	-	-	-	-	-		-	68.0	15.0	15.0	25.0	15.0	15.0	123.0	-	41.3	15.8	15.9	26.8	16.5	17.0 - 132.4
5 CARE HQ ADMIN COSTS /b	sum	-	-	-	-	-	-	-	-		-	31.3	31.3	31.3	31.3	31.3	31.3	187.7	-	32.1	34.1	34.9	34.8	35.4	35.3 - 206.2
Sub-Total TECHNICAL ASSISTANCE (CARE)											-	238.7	220.7	220.7	230.7	220.7	220.7	1,350.3	-	287.8	270.1	278.2	291.7	288.3	288.4 - 1,882.5
Total INVESTMENT COSTS											948.8	821.9	831.4	841.5	833.2	840.0	886.3	5,382.8	958.2	878.8	834.8	842.2	883.5	887.0	918.4 - 5,103.0
II. RECURRENT COSTS																									
A VEHICLE OPERATION AND MAINTENANCE																									
GHD VEHICLES	km	54,000	108,000	108,000	108,000	108,000	108,000	108,000	702,000	2	12.2	28.4	28.4	28.4	28.4	28.4	28.4	171.4	16.7	28.9	32.0	32.4	32.8	33.5	34.8 - 211.3
1000 cc GHD VEHICLES	km	21,600	43,200	43,200	43,200	43,200	43,200	43,200	280,800	1	3.8	8.5	8.5	8.5	8.5	8.5	8.5	47.4	3.8	7.8	7.9	8.0	8.1	8.3	8.6 - 52.2
MOTORCYCLES (125 cc)	km	90,000	180,000	180,000	180,000	180,000	180,000	180,000	1,170,000	6	5.8	11.6	11.6	11.8	11.8	11.8	11.5	75.8	6.5	12.8	14.1	14.3	14.5	14.8	15.3 - 83.2
BICYCLES	p.a	10	20	40	20	40	20	40	150	188	0.3	0.7	1.3	0.7	1.3	0.7	1.3	6.2	0.4	0.7	1.5	0.8	1.5	0.8	1.5 - 7.3
Sub-Total VEHICLE OPERATION AND MAINTENANCE											22.0	49.2	49.8	49.2	49.8	49.2	49.8	298.8	25.2	52.9	55.5	55.5	57.0	57.5	60.4 - 384.0
Total RECURRENT COSTS											22.0	49.2	49.8	49.2	49.8	49.8	49.2	49.8	298.8	25.2	52.9	55.5	55.5	57.0	57.5	60.4 - 384.0
Total											968.4	888.7	877.3	888.7	884.9	889.2	910.2	5,688.5	981.8	931.7	890.3	898.8	920.5	894.5	978.7 - 5,487.0

/a HGDs will not necessarily all be provided with uniform kits, will depend on individual requirements.
/b 9% of project funds disbursed through CARE. Share of establishment cost of CARE Nairobi office, estimated at US$79000 per year not included as project cost

UGANDA
UGANDA FORESTRY REHABILITATION PROJECT
Table 202. FARM FORESTRY
CFD TAKEOVER OPERATION
Detailed Cost Table
('000 Sh. '0001)

Annex 3
Table 202
Page 1

	Unit	Quantity								Unit Cost	Base Costs in $								Totals Including Contingencies ('000 $)							
		0	1	2	3	4	5	6	Total		0	1	2	3	4	5	6	Total	0	1	2	3	4	5	6	Total
I. INVESTMENT COSTS																										
A. NURSERY TOOLS, EQUIPMENT AND OFFICE SUPPLIES																										
CSI BRUSH (HAND)	each	-	28	28	37	28	37	166	344	138	-	0.6	0.8	0.8	0.8	0.8	2.4	5.5	-	0.7	0.8	0.7	0.8	0.8	2.1	6.9
CLOSEY CAN	each	-	110	220	550	660	825	330	2,345	20	-	0.4	1.1	1.7	2.3	2.7	3.2	11.4	-	0.4	1.3	2.1	2.8	3.4	4.1	14.1
HOE	each	-	110	220	330	660	825	330	2,345	17	-	0.3	0.9	1.4	1.9	2.3	2.8	9.5	-	0.4	1.1	1.7	2.4	2.9	3.4	11.9
AXE	each	-	15	15	15	15	25	210	425	14	-	0.1	0.1	0.1	0.1	0.1	0.5	1.1	-	0.1	0.1	0.2	0.2	0.2	0.5	1.4
PANGA	each	-	15	15	88	33	220	305	885	10	-	0.1	0.1	0.1	0.4	0.4	0.3	1.4	-	0.1	0.1	0.2	0.5	0.5	0.4	1.7
WATERING CAN	each	-	122	401	628	851	1,007	1,103	4,206	24	-	0.8	2.3	3.9	4.8	5.0	6.6	24.1	-	0.9	2.7	4.3	5.8	7.0	8.5	28.9
SHOVEL	each	-	28	28	37	28	37	166	344	36	-	0.2	0.2	0.2	0.2	0.2	0.6	1.4	-	0.2	0.2	0.2	0.2	0.2	0.8	1.7
WHEELBARROW	each	-	28	28	37	28	37	166	344	288	-	1.3	1.3	1.3	1.3	1.3	5.0	11.8	-	1.5	1.8	1.8	1.8	1.8	6.5	14.5
MACHETE BOOK	each	-	15	15	25	25	25	25	210	7	-	0.1	0.1	0.0	0.0	0.0	0.0	0.2	-	0.1	0.1	0.0	0.0	0.0	0.0	0.3
OFFICE SUPPLIES	each	-	11	-	5	-	5	-	21	200	-	0.4	-	0.2	-	0.2	-	0.7	-	0.4	-	0.2	-	0.2	-	0.9
STATIONERY	each	-	11	11	16	16	21	21	96	650	-	1.2	1.2	1.8	1.8	2.4	2.4	10.9	-	1.4	1.5	2.2	2.2	2.9	3.1	13.4
Sub-Total NURSERY TOOLS, EQUIPMENT AND OFFICE SUPPLIES											-	9.5	7.9	11.0	13.5	16.2	23.6	77.7	-	8.4	9.9	13.3	16.6	20.3	26.7	95.5
B. NURSERY ESTABLISHMENT																										
SEED	kg	-	5	10	15	20	25	30	105	120	-	0.1	0.2	0.3	0.5	0.6	0.7	2.4	-	0.1	0.2	0.4	0.6	0.7	0.9	2.9
POLYTHENE TUBES	kg	-	5,000	5,830	6,665	7,330	7,915	8,230	41,100	40	-	30.7	40.2	52.9	66.4	82.8	68.1	325.0	-	40.0	55.2	84.0	71.5	78.8	85.7	401.0
FERTILIZER	kg	-	330	370	430	477	513	580	2,682	3	-	0.2	0.2	0.2	0.3	0.3	0.3	1.5	-	0.2	0.2	0.3	0.3	0.4	0.4	1.8
PESTICIDES	kg	-	144	168	192	212	228	240	1,184	135	-	2.3	3.0	4.4	4.8	5.2	5.4	26.0	-	2.8	4.5	5.3	5.8	6.5	7.1	33.0
UNSKILLED LABOR NURSERY OPERATION	man-months	-	1,050	1,080	2,130	2,280	2,430	2,580	13,050	35	-	10.0	12.0	12.8	13.8	14.7	15.6	78.8	-	17.2	24.8	27.8	30.7	33.8	37.2	171.4
Sub-Total NURSERY ESTABLISHMENT											-	53.2	62.4	78.7	77.7	83.5	88.1	435.9	-	67.3	84.8	97.7	108.8	126.0	131.2	610.2
C. VEHICLES																										
4WD PICKUP	each	-	2	1	1	1	-	4	9	101,000	-	30.0	17.0	17.0	17.0	-	50.0	133.0	-	38.4	20.2	20.6	20.8	-	58.2	158.2
4WD PICKUP (1000 cc)	each	-	2	1	1	1	4	1	10	67,875	-	22.7	11.2	11.3	11.3	45.3	11.3	113.3	-	33.3	13.5	13.7	13.9	56.6	14.7	138.9
CARGO VAN	each	-	2	2	-	-	-	2	6	258,344	-	68.1	68.1	-	-	-	68.1	226.3	-	82.9	102.8	-	-	-	111.7	316.4
MOTORCYCLES (125 CC)	each	-	11	11	11	28	11	28	88	10,195	-	18.7	18.7	18.7	44.2	18.7	44.2	163.1	-	31.7	32.3	32.6	94.1	33.4	37.2	301.9
BICYCLES	each	-	33	44	88	88	165	88	432	650	-	8.1	8.5	11.8	8.4	15.5	12.4	63.8	-	9.4	7.7	14.3	11.5	18.4	15.0	76.4
SPARES (2WD)	each	-	-	-	-	-	-	-	-	-	-	37.9	27.9	11.8	16.4	15.9	44.4	156.3	-	38.7	37.5	23.4	26.6	26.8	105.9	329.8
Sub-Total VEHICLES											-	203.4	167.5	70.8	98.3	85.4	208.4	831.8	-	233.3	224.3	96.6	126.9	126.2	353.8	1,263.1
D. BUILDINGS/WATER SUPPLY																										
FORESTERS HOUSE	unit	-	12	10	10	10	10	10	62	92,631	-	185.7	154.7	154.7	154.7	154.7	154.7	958.3	-	221.9	192.7	185.9	188.6	203.4	210.5	1,222.8
FURNITURE FORESTERS	each	-	12	10	10	10	10	10	62	7,330	-	14.7	12.2	12.2	12.2	12.2	13.2	75.7	-	18.6	14.1	14.3	14.4	14.8	15.3	89.5
WATER SUPPLY CONNECTION TO WATER MAINS	unit	-	12	10	10	10	10	10	62	144	-	0.3	0.2	0.2	0.2	0.2	0.2	1.5	-	0.3	0.3	0.3	0.3	0.3	0.3	1.9
WATER SUPPLY CONSTRUCTION (UNDERWATER STORAGE)	unit	-	12	10	10	10	10	10	62	8,884	-	17.3	14.4	14.4	14.4	14.4	14.4	89.5	-	20.7	18.0	18.3	18.5	19.0	19.6	114.1
Sub-Total BUILDINGS/WATER SUPPLY											-	217.9	181.8	181.8	181.8	181.8	181.8	1,126.0	-	259.2	225.1	218.7	221.8	237.4	245.8	1,428.1
E. FARM FORESTRY EXTENSION																										
FIELD PRODUCTION, PROCESSING AND PURCHASE	set	-	2	2	2	1	1	1	9	17,872	-	5.9	5.9	5.9	2.9	2.9	2.9	26.5	-	6.6	7.0	7.1	3.5	3.7	3.8	32.1
Sub-Total FARM FORESTRY EXTENSION											-	5.9	5.9	5.9	2.9	2.9	2.9	26.5	-	6.6	7.0	7.1	3.5	3.7	3.8	32.1
F. TRAINING																										
OVERSEAS FELLOWSHIPS /a	man-months	-	-	3	-	3	-	-	8	20,063	-	-	13.0	-	13.0	-	-	26.1	-	-	15.1	-	15.4	-	-	30.5
PLANE FARE	each	-	-	1	-	1	-	-	2	10,547	-	-	3.3	-	3.3	-	-	6.5	-	-	3.8	-	3.8	-	-	7.6
IN-SERVICE TRAINING KYAMBOGO CF, FTC	man-months	-	-	44	44	40	40	40	208	2,416	-	-	17.7	17.7	16.1	16.1	15.1	83.7	-	-	35.5	38.3	35.9	37.1	38.4	185.3
IN-SERVICE TRAINING																										

[illegible] (FD)	man-months	-	20	20	20	20	20	-	100	2,415	-	9.7	8.1	8.1	8.1	8.1	-	41.9	-	19.7	16.8	17.4	18.0	18.8	-	87.2
TEACHER TRAINING																										
UPGRADING STAFF	man-months	8	-	-	-	-	-	-	8	2,415	2.4	-	-	-	-	-	-	2.4	3.0	-	-	-	-	-	-	3.0
FARMER TRAINING																										
VISIT FARMING COSTS	man-months	-	-	400	400	400	400	400	2,400	150	-	-	13.5	13.5	13.5	13.5	13.5	67.5	-	-	27.9	29.2	30.2	31.2	32.3	150.8
Sub-Total TRAINING											2.4	9.7	95.6	38.3	54.0	37.7	29.6	236.2	3.0	19.7	90.8	84.9	103.3	88.9	70.7	465.3
Total INVESTMENT COSTS											2.4	485.8	481.0	378.0	428.0	417.3	992.2	2,785.5	3.0	811.7	650.7	528.4	891.2	864.5	676.0	3,875.5
II. RECURRENT COSTS																										
A. VEHICLE OPERATION AND MAINTENANCE																										
4WD PICKUP	km	-	43,200	84,800	85,400	168,000	168,000	151,200	201,000	2	-	10.5	15.8	21.1	26.4	26.4	26.9	127.1	-	12.4	19.2	25.9	32.6	33.6	48.7	172.6
1600 CC 4WD PICKUP	km	-	43,200	84,800	85,400	168,000	151,200	151,200	804,000	1	-	6.5	8.8	13.0	16.3	22.8	22.8	81.2	-	7.6	11.8	16.0	20.3	28.1	30.1	114.9
CITROEN VAN	km	-	28,000	72,000	72,000	72,000	72,000	72,000	386,000	2	-	11.8	23.3	23.3	23.3	23.3	23.3	130.0	-	13.6	28.2	28.8	29.9	29.7	30.7	160.8
MOTORCYCLES (125 CC)	km	-	132,000	264,000	264,000	528,000	528,000	396,000	2,100,000	6	-	8.5	17.1	25.6	37.2	37.2	48.9	174.5	-	10.0	20.7	31.5	48.4	47.5	84.5	230.4
BICYCLES	p.a.	-	90	90	125	125	175	175	775	155	-	1.8	3.2	4.4	4.4	5.7	5.7	15.3	-	2.0	3.7	5.1	5.2	6.9	7.2	30.2
Sub-Total VEHICLE OPERATION AND MAINTENANCE											-	39.0	68.2	87.4	107.8	115.4	137.6	555.2	-	65.8	83.7	107.2	132.8	148.7	181.1	668.8
B. BUILDING/WATER SUPPLY MAINTENANCE																										
FORESTERS HOUSE	p.a.	-	-	-	-	-	-	-	-		-	3.8	10.2	14.9	18.5	24.1	28.8	100.8	-	3.8	10.2	27.7	27.4	47.7	58.9	186.5
WATER SUPPLY	p.a.	-	-	-	-	-	-	-	-		-	0.5	1.0	1.4	1.8	2.2	2.7	9.8	-	0.8	1.7	2.6	3.5	4.5	5.5	18.5
Sub-Total BUILDING/WATER SUPPLY MAINTENANCE											-	6.1	11.2	16.2	21.3	26.4	31.5	112.7	-	6.4	20.0	30.3	40.8	52.1	64.4	217.0
C. FARM FORESTRY EXTENSION																										
EXTENSION MATERIALS AND FIELD	sum	-	1	1	1	1	1	1	6	28,881	-	4.8	4.8	4.8	4.8	4.8	4.8	28.8	-	5.7	5.0	5.1	5.2	5.3	5.5	26.9
NIGHT ALLOWANCES (FD, F)	night	-	4,000	4,000	5,250	5,250	6,300	6,300	31,900	81	-	53.7	53.7	70.3	70.3	87.2	87.2	422.7	-	82.0	110.6	152.2	157.2	201.1	208.2	922.2
DAY ALLOWANCES (FD, TD)	night	-	14,000	14,000	18,900	18,900	23,400	23,400	113,400	9	-	31.7	31.7	26.5	26.5	35.3	35.3	171.2	-	37.8	44.8	61.7	63.7	81.4	84.2	372.6
NIGHT ALLOWANCES (RANGERS)	night	-	800	800	1,050	1,050	1,200	1,200	6,300	30	-	2.7	2.7	3.5	3.5	4.4	4.4	21.1	-	4.6	5.5	7.6	7.9	10.1	10.4	46.1
Sub-Total FARM FORESTRY EXTENSION											-	82.9	82.9	107.3	107.3	131.7	131.7	644.0	-	129.8	165.9	227.8	233.8	298.8	308.5	1,378.8
Total RECURRENT COSTS											-	128.0	162.3	211.0	236.2	273.5	299.8	1,312.8	-	195.9	270.5	365.1	406.4	487.8	555.0	2,262.8
Total											2.4	523.5	644.3	589.0	664.2	690.8	992.0	4,198.3	3.0	807.6	921.2	893.5	1,918.6	1,402.3	1,431.1	6,388.2

/a For 2 people to India.

May 20, 1987 12:50

UGANDA
UGANDA FORESTRY REHABILITATION PROJECT
Table 203. FARM FORESTRY
AGROFORESTRY DEMONSTRATION CENTERS
Detailed Cost Table
(U. Sh. '000)

	Unit	Quantity								Base Costs in $								Totals Including Contingencies (US$ '000)							
		0	1	2	3	4	5	6	Total	Unit Cost	0	1	2	3	4	5	6	Total	0	1	2	3	4	5	6	Total
I. INVESTMENT COSTS																										
A. TREE NURSERIES/ DEMONSTRATION CENTERS																										
1. WATER STORAGE DRUMS 44 G. CAPACITY	each	-	3	-	-	-	-	-	3	228	-	0.1	-	-	-	-	-	0.1	-	0.2	-	-	-	-	-	0.2
2 NURSERY TOOLS AND EQUIPMENT	sum	-	1	-	0.1	-	0.1	-	1.2	4,126	-	2.1	-	0.1	-	0.1	-	2.2	-	2.5	-	0.1	-	0.1	-	2.6
3. NURSERY ESTABLISHMENT UNSKILLED LABOR	man-days	-	128	218	327	435	435	-	1,548	3	-	0.1	0.1	0.2	0.2	0.2	-	0.8	-	0.1	0.2	0.4	0.5	0.5	-	1.7
4. INPUTS -TREE NURSERIES/ DEMONSTRATION CENTERS																										
SEED	kg	-	20	20	20	20	-	-	80	14	-	0.0	0.0	0.0	0.0	-	-	0.2	-	0.1	0.1	0.1	0.1	-	-	0.2
POLYTHENE TUBES	kg	-	32	32	32	32	-	-	128	48	-	0.2	0.3	0.3	0.3	-	-	1.0	-	0.3	0.3	0.3	0.3	-	-	1.2
MISC. INPUTS, NURSERIES	sum	-	60	60	60	60	-	-	240	61	-	0.6	0.6	0.6	0.6	-	-	2.4	-	0.9	1.1	1.1	1.1	-	-	6.2
UNSKILLED LABOR, STOVE WORKSHOPS	man-days	-	210	210	210	210	-	-	840	3	-	0.1	0.1	0.1	0.1	-	-	0.4	-	0.2	0.2	0.2	0.2	-	-	0.9
MISC., STOVE WORKSHOPS	sum	-	1	1	1	1	1	1	6	5,082	-	0.8	0.8	0.8	0.8	0.8	0.8	5.1	-	1.3	1.5	1.5	1.6	1.6	1.7	9.1
ARTISANS LABOR STOVE WORKSHOPS	man-days	-	350	350	350	350	350	350	2,100	3	-	0.2	0.2	0.2	0.2	0.2	0.2	1.1	-	0.3	0.4	0.4	0.4	0.4	0.4	2.3
Sub-Total INPUTS -TREE NURSERIES/ DEMONSTRATION CENTERS											-	2.0	2.0	2.0	2.0	1.0	1.0	10.2	-	3.0	3.5	3.6	3.7	2.0	2.1	17.9
Sub-Total TREE NURSERIES/ DEMONSTRATION CENTERS											-	4.3	2.2	2.3	2.3	1.3	1.0	13.3	-	5.8	3.7	4.0	4.2	2.6	2.1	22.4
B BUILDINGS																										
1. HOUSING																										
NURSERYMENS HOUSING	unit	-	3	-	-	-	-	-	3	12,378	-	8.2	-	-	-	-	-	8.2	-	7.4	-	-	-	-	-	7.4
STORE/LABOR HOUSING	unit	-	2	-	-	-	-	-	2	4,085	-	8.1	-	-	-	-	-	8.1	-	7.3	-	-	-	-	-	7.3
Sub-Total HOUSING											-	12.3	-	-	-	-	-	12.3	-	14.7	-	-	-	-	-	14.7
2. OTHER BUILDINGS																										
1 ROOM OFFICES	unit	-	3	-	-	-	-	-	3	7,014	-	2.5	-	-	-	-	-	2.5	-	4.2	-	-	-	-	-	4.2
STOVE WORKSHOP	unit	-	3	-	-	-	-	-	3	4,126	-	2.1	-	-	-	-	-	2.1	-	2.5	-	-	-	-	-	2.5
SHELTER	unit	-	3	-	-	-	-	-	3	248	-	0.1	-	-	-	-	-	0.1	-	0.1	-	-	-	-	-	0.1
FURNITURE FOR OFFICE	each	-	3	-	-	-	-	-	3	2,478	-	1.2	-	-	-	-	-	1.2	-	1.4	-	-	-	-	-	1.4
FURNITURE FOR HOUSES	each	-	3	-	-	-	-	-	3	3,258	-	1.8	-	-	-	-	-	1.8	-	1.8	-	-	-	-	-	1.8
Sub-Total OTHER BUILDINGS											-	8.8	-	-	-	-	-	8.8	-	10.0	-	-	-	-	-	10.0
Sub-Total BUILDINGS											-	20.8	-	-	-	-	-	20.8	-	24.7	-	-	-	-	-	24.7
Total INVESTMENT COSTS											-	25.2	2.2	2.3	2.3	1.3	1.0	34.2	-	30.5	3.7	4.0	4.2	2.6	2.1	47.2
II. RECURRENT COSTS																										
A BUILDING MAINTENANCE																										
NURSERYMENS HOUSING	p.a.	-	-	-	-	-	-	-	-		-	0.2	0.2	0.2	0.2	0.2	0.2	1.1	-	0.2	0.3	0.2	0.4	0.4	0.4	2.1
1 ROOM OFFICES	p.a.	-	-	-	-	-	-	-	-		-	0.1	0.1	0.1	0.1	0.1	0.1	0.6	-	0.2	0.2	0.2	0.2	0.2	0.2	1.2
Sub-Total BUILDING MAINTENANCE											-	0.3	0.3	0.3	0.3	0.3	0.3	1.7	-	0.5	0.5	0.5	0.6	0.6	0.6	3.2
Total RECURRENT COSTS											-	0.3	0.3	0.3	0.3	0.3	0.3	1.7	-	0.5	0.5	0.5	0.6	0.6	0.6	3.2
Total											-	25.5	2.4	2.6	2.6	1.6	1.3	35.9	-	31.0	4.2	4.6	4.7	3.2	2.7	50.4

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UGANDA
UGANDA FORESTRY REHABILITATION PROJECT
Table 301. NATURAL FOREST MANAGEMENT
BOUNDARIES - HIGH FOREST
Detailed Cost Table
('000 Sh.)

	Unit	Quantity								Unit Cost	Base Costs in $								Totals Including Contingencies (US$ '000)							
		0	1	2	3	4	5	6	Total		0	1	2	3	4	5	6	Total	0	1	2	3	4	5	6	Total
I. INVESTMENT COSTS																										
A. CIVIL WORKS																										
FOREST GUARD HOUSE	unit	-	2	4	4	4	-	-	14	12,278	-	4.1	8.3	8.3	8.3	-	-	28.9	-	4.8	10.3	10.4	10.8	-	-	35.2
FORESTER HOUSE	unit	-	-	1	1	1	-	-	3	32,831	-	-	15.5	15.5	15.5	-	-	46.4	-	-	19.3	19.5	19.9	-	-	58.7
DEPOT	unit	-	2	4	4	4	-	-	14	10,521	-	3.5	7.0	7.0	7.0	-	-	24.5	-	4.2	8.7	8.9	9.0	-	-	30.8
Sub-Total CIVIL WORKS											-	7.6	30.7	30.7	30.7	-	-	99.8	-	9.1	38.2	38.9	39.4	-	-	125.8
B. MACHINERY & EQUIPMENT																										
MOTORCYCLES (125 cc)	each	-	1	2	-	-	1	2	8	10,195	-	1.7	3.4	-	-	1.7	3.4	10.2	-	2.0	4.1	-	-	2.1	4.4	12.6
BICYCLES	each	-	2	4	4	4	-	-	14	884	-	0.3	0.6	0.6	0.6	-	-	2.1	-	0.3	0.7	0.7	0.7	-	-	2.5
SPARES (2YR)	each	-	-	-	-	-	-	-	-		-	0.4	0.8	0.1	0.1	0.3	0.7	2.5	-	0.7	1.6	0.3	0.3	0.8	1.6	5.3
PANGAS	set	-	12	36	60	84	84	84	360	10	-	0.0	0.1	0.1	0.1	0.1	0.1	0.6	-	0.0	0.1	0.1	0.2	0.2	0.2	0.7
HOES	set	-	12	36	60	84	84	84	360	14	-	0.0	0.1	0.1	0.2	0.2	0.2	0.8	-	0.0	0.1	0.2	0.3	0.3	0.3	1.1
OFFICE FURNITURE	each	-	2	5	5	5	-	-	17	331	-	0.1	0.3	0.3	0.3	-	-	1.1	-	0.2	0.5	0.6	0.6	-	-	1.9
UNIFORMS /a	set	-	4	10	14	18	14	14	74	302	-	0.2	0.5	0.7	0.9	0.7	0.7	3.7	-	0.3	1.0	1.5	2.0	1.6	1.7	8.2
FOREST RESERVE SIGN BOARDS	set	-	200	800	1,000	-	-	-	1,800	14	-	0.5	1.4	2.3	-	-	-	4.1	-	0.5	1.6	2.7	-	-	-	4.9
Sub-Total MACHINERY & EQUIPMENT											-	3.2	7.1	4.2	2.3	3.1	5.1	25.0	-	4.1	9.8	6.1	4.0	5.0	8.2	37.2
C. BOUNDARY ESTAB LABOR	man-days	-	2,300	5,500	11,509	20,700	20,700	20,700	82,800	3	-	7.2	2.9	5.8	10.4	10.4	10.4	41.7	-	2.0	7.2	12.5	23.2	24.9	24.9	93.8
D. TECHNICAL ASSISTANCE																										
FORESTRY MANAGEMENT SPECIALIST	M.M.	-	10	10	10	10	2	-	42	65,158	-	108.6	108.6	108.6	108.6	21.7	-	456.1	-	112.1	114.3	115.4	118.6	23.8	-	482.2
Sub-Total TECHNICAL ASSISTANCE											-	108.6	108.6	108.6	108.6	21.7	-	456.1	-	112.1	114.3	115.4	118.6	23.8	-	482.2
Total INVESTMENT COSTS											-	130.8	148.8	148.4	152.0	35.2	15.5	632.8	-	127.3	169.5	172.9	183.2	52.8	33.0	725.9
II. RECURRENT COSTS																										
A. O & M																										
7 TON TRUCK FOR PLANT TRANSPORT /b	km.	-	-	1,000	8,000	10,000	1,000	1,000	19,000	2	-	-	0.3	1.9	3.1	0.3	0.3	5.9	-	-	0.4	2.2	3.8	0.4	0.4	7.2
MOTORCYCLE	km.	-	12,000	36,000	36,000	36,000	36,000	36,000	192,000	0	-	0.8	2.3	2.3	2.3	2.3	2.3	12.6	-	0.9	2.8	2.9	2.8	3.0	3.1	15.5
BUILDING MAINTENANCE	p.a.	-	-	-	-	-	-	-	-		-	0.2	1.2	2.1	2.9	2.9	2.9	12.6	-	0.4	2.1	2.9	3.7	5.9	6.1	24.1
Sub-Total O & M											-	1.0	3.8	6.2	8.4	5.6	5.6	30.7	-	1.3	5.2	8.0	12.5	9.3	9.6	46.9
B. OTHER																										
WEIGHT ALLOWANCES	night	-	-	100	200	300	300	300	1,200	81	-	-	1.2	2.7	4.0	4.0	4.0	16.1	-	-	2.5	5.8	9.0	9.3	9.8	36.4
OFFICE CONSUMABLES	pa	-	2	7	12	17	17	17	72	309	-	0.1	0.4	0.6	0.9	0.9	0.9	3.7	-	0.1	0.4	0.6	1.1	1.2	1.2	4.8
Sub-Total OTHER											-	0.1	1.7	3.3	4.9	4.9	4.9	19.8	-	0.1	2.9	6.5	10.1	10.4	10.^	41.3
Total RECURRENT COSTS											-	1.1	5.5	9.5	13.3	10.5	10.5	50.5	-	1.4	8.9	15.0	22.9	19.7	20.4	88.2
Total											-	131.7	155.4	158.0	165.3	45.7	26.1	683.2	-	128.7	178.0	188.5	205.9	72.5	53.4	814.0

/a Two at start, then 1 per year.
/b Truck purchased in Encroachment subcomponent.

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RWANDA
RWANDA FORESTRY REHABILITATION PROJECT
Table 302. NATURAL FOREST MANAGEMENT
SAVANNA DEMARCATION
Detailed Cost Table
US $'000

	Unit	Quantity 0	1	2	3	4	5	6	Total	Unit Cost	Base Costs in $ 0	1	2	3	4	5	6	Total	Totals Including Contingencies US$ '000 0	1	2	3	4	5	6	Total
I. INVESTMENT COSTS																										
A. CIVIL WORKS																										
FOREST GUARD HOUSE	unit	-	2	4	6	8	8	-	18	12,278	- 4.1	8.2	8.2	8.2	8.2	-	-	37.1	- 4.9	10.2	10.4	10.6	10.8	-	-	47.1
FORESTER HOUSE	unit	-	1	2	2	2	-	-	7	93,831	- 15.5	30.9	30.9	30.9	-	-	-	108.2	- 18.5	38.5	39.2	39.7	-	-	-	135.9
AIRSTRIP	unit	-	2	4	4	4	4	-	18	10,921	- 3.5	7.0	7.0	7.0	7.0	-	-	31.6	- 4.2	8.7	8.9	9.0	9.2	-	-	40.0
Sub-Total CIVIL WORKS											- 23.1	46.2	46.2	46.2	15.3	-	-	177.9	- 27.8	57.8	58.5	59.3	20.1	-	-	223.0
B. MACHINERY & EQUIPMENT																										
MOTORCYCLES (125 cc)	each	-	1	2	2	2	1	2	10	10,185	- 1.7	3.4	3.4	3.4	1.7	3.4	-	17.0	- 2.0	4.1	4.1	4.2	2.1	4.4	-	20.8
BICYCLES	each	-	2	4	4	8	8	4	30	884	- 0.2	0.8	0.8	0.8	1.2	0.8	-	4.1	- 0.2	0.7	0.7	1.1	1.5	0.8	-	5.1
SPARES (2WD)	each	-	-	-	-	-	-	-	-	-	- 0.4	0.8	0.8	0.8	0.8	0.8	-	4.2	- 0.7	1.6	1.7	1.8	1.3	1.8	-	8.2
PUMPAS	set	-	20	20	100	240	270	270	1,020	10	- 0.0	0.1	0.2	0.3	0.4	0.4	-	1.8	- 0.1	0.2	0.2	0.4	0.5	0.6	-	2.0
HOES	set	-	20	20	100	240	270	270	1,020	14	- 0.1	0.2	0.4	0.5	0.6	0.8	-	2.5	- 0.1	0.3	0.5	0.6	0.8	0.8	-	3.2
COMPASSES	set	-	25	-	-	-	-	-	25	230	- 1.6	-	-	-	-	-	-	1.6	- 1.8	-	-	-	-	-	-	1.8
OFFICE FURNITURE	each	-	3	6	6	6	-	-	18	381	- 0.2	0.8	0.8	0.2	-	-	-	1.2	- 0.3	0.7	0.7	0.5	-	-	-	2.1
UNIFORMS /a	set	-	4	10	14	18	22	20	88	302	- 0.2	0.5	0.7	0.8	1.1	1.0	-	4.6	- 0.3	1.0	1.5	2.0	2.8	2.4	-	9.9
Sub-Total MACHINERY & EQUIPMENT											- 4.3	6.8	6.5	7.1	5.8	6.9	-	35.4	- 5.4	8.5	9.5	10.7	8.8	10.8	-	53.8
C. RUANDAN ESTAB LABOUR /b	man-days	-	8,000	8,000	12,000	10,400	8,000	4,100	50,500	3	- 4.8	4.8	4.8	5.2	4.8	2.1	-	25.4	- 7.0	8.3	13.1	11.7	8.3	5.8	-	54.3
Total INVESTMENT COSTS											- 31.4	58.3	58.7	59.5	34.9	9.0	-	238.8	- 39.9	74.4	81.1	81.7	38.2	15.9	-	331.2
II. RECURRENT COSTS																										
A. O & M																										
7 TON TRUCK FOR PLANT TRANSPORT /c	km	-	10,000	10,000	15,000	13,000	10,000	5,000	63,000	2	- 2.1	2.1	4.8	4.0	2.1	1.5	-	18.3	- 2.8	2.7	5.7	5.0	2.9	2.0	-	24.0
MOTORCYCLE	km	-	24,000	72,000	120,000	168,000	168,000	168,000	720,000	0	- 1.8	4.7	7.8	10.8	10.8	10.8	-	48.5	- 1.8	5.8	8.5	12.5	13.8	14.3	-	56.7
BUILDING MAINTENANCE	p.a.	-	-	-	-	-	-	-	-	-	- 0.7	2.1	2.5	4.8	5.2	5.2	-	21.7	- 1.1	3.7	6.5	9.3	10.5	10.9	-	41.9
Sub-Total O & M											- 5.3	8.8	15.8	18.7	18.2	17.7	-	87.7	- 8.5	12.1	21.7	27.8	28.3	27.2	-	124.6
B. OTHER																										
RIGHT ALLOWANCES	night	-	100	300	500	700	700	700	3,000	81	- 1.3	4.0	8.7	9.4	9.4	9.4	-	40.3	- 2.3	5.3	10.5	21.8	21.7	22.4	-	99.3
OFFICE CONSUMABLES	pa	-	3	8	13	21	25	25	98	308	- 0.2	0.5	0.8	1.1	1.3	1.3	-	5.1	- 0.2	0.8	1.0	1.4	1.7	1.8	-	6.8
Sub-Total OTHER											- 1.5	4.5	7.5	10.5	10.7	10.7	-	45.2	- 2.5	8.9	15.5	22.4	23.4	24.2	-	98.7
Total RECURRENT COSTS											- 6.8	14.3	22.3	29.2	28.9	28.4	-	133.0	- 8.9	22.0	37.2	50.2	51.8	51.4	-	221.4
Total											- 38.2	70.6	82.1	88.8	54.8	37.4	-	371.8	- 48.8	96.4	118.2	131.9	80.0	67.2	-	552.5

/a Two at start, then 1 per year.
/b Boundary opening, patrolling, and planting marker trees.
/c Truck purchased in Encroachment subcomponent.

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UGANDA
OGWARA FORESTRY REHABILITATION PROJECT
Table 303. NATURAL FOREST MANAGEMENT
ENRICHMENT AND ENCROACHMENT PLANTING
Detailed Cost Table
(U. Sh. '000)

	Unit	Quantity								Unit Cost	Base Costs in $								Totals Including Contingencies (US$ '000)							
		0	1	2	3	4	5	6	Total		0	1	2	3	4	5	6	Total	0	1	2	3	4	5	6	Total
I INVESTMENT COSTS																										
A. CIVIL WORKS																										
FOREST GUARD HOUSE	unit	-	2	6	8	6	8	-	32	12,378	-	4.1	12.4	16.5	16.5	16.5	-	86.0	-	4.8	15.4	20.8	21.2	21.7	-	84.1
FORESTER HOUSE	unit	-	2	3	5	5	5	5	25	22,631	-	30.8	46.4	77.4	77.4	77.4	77.4	386.6	-	38.5	57.8	97.8	98.3	101.7	105.3	498.9
GATEPOST	unit	-	2	6	8	8	8	-	32	10,521	-	2.5	10.5	14.0	14.0	14.0	-	56.1	-	4.2	13.1	17.8	18.0	18.4	-	71.5
NURSERY WATER SUPPLY /a	set	-	1	2	1	-	1	2	7	6,825	-	0.8	1.5	0.8	-	0.8	1.5	5.4	-	0.8	1.8	1.0	-	1.0	2.1	6.8
NURSERY GATEPOST	unit	-	1	2	1	-	-	-	4	10,521	-	1.8	3.5	1.8	-	-	-	7.0	-	2.1	4.4	2.2	-	-	-	8.7
NURSERY ESTABLISHMENT LABOR	man-days	-	450	900	450	-	-	-	1,800	3	-	0.2	0.5	0.2	-	-	-	0.9	-	0.4	0.8	0.5	-	-	-	1.8
ROAD REHABILITATION	unit	-	2	2	2	3	3	3	17	8,168	-	2.1	2.1	3.1	3.1	3.1	3.1	17.5	-	2.5	3.5	3.9	4.0	4.1	4.2	22.3
Sub-total CIVIL WORKS											-	43.4	77.9	112.7	111.0	111.8	82.0	538.8	-	91.9	97.4	144.2	142.4	148.9	111.6	884.4
B. MACHINERY & EQUIPMENT																										
7 TON TRUCK	each	-	1	1	-	-	1	1	4	100,328	-	31.7	31.7	-	-	31.7	31.7	126.9	-	38.8	37.9	-	-	39.7	41.1	155.6
72hp TRACTOR & TRAILER	each	-	1	1	-	-	1	1	4	176,734	-	29.5	29.5	-	-	29.5	29.5	117.8	-	34.2	35.2	-	-	36.9	38.2	144.5
MOTORCYCLES (125 cc)	each	-	6	3	5	5	7	10	36	10,188	-	10.2	5.1	8.5	8.5	11.9	17.0	61.2	-	11.8	5.9	10.3	10.4	14.9	22.0	75.3
BICYCLES	each	-	10	8	8	20	44	8	58	886	-	1.5	0.9	1.2	1.5	2.1	1.2	8.2	-	1.7	1.1	1.4	1.8	2.6	1.5	10.1
SPARES (100)	each	-	-	-	-	-	-	-	-		-	14.6	13.4	1.8	2.0	15.0	15.8	82.8	-	25.3	27.7	4.2	4.5	34.5	37.9	134.0
NURSERY TOOLS	set	-	1	2	1	1	2	1	8	2,719	-	0.4	0.9	0.5	0.5	0.8	0.5	3.8	-	0.5	1.1	0.5	0.6	1.1	0.8	4.4
OFFICE SUPPLIES & FIELD TOOLS	sum	-	1	-	-	1	-	-	2	46,827	-	43.3	-	-	43.3	-	-	86.6	-	51.7	-	-	55.6	-	-	107.3
OFFICE FURNITURE	each	-	4	9	13	12	13	5	57	351	-	0.3	0.8	0.8	0.8	0.8	0.3	3.8	-	0.4	1.0	1.1	1.1	1.0	0.5	5.5
UNIFORMS /b	set	-	10	14	24	22	40	22	152	302	-	0.8	0.7	1.2	1.5	2.0	1.8	8.0	-	1.4	1.5	2.8	3.8	4.5	3.8	17.5
Sub-total MACHINERY & EQUIPMENT											-	132.2	82.8	14.1	58.2	93.8	97.6	478.8	-	163.7	111.4	20.5	77.8	130.1	145.9	655.8
C. LOCAL COURSES	man-months	-	8	8	8	8	8	-	40	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
D. PLANTATION ESTABLISHMENT																										
1. NURSERY MATERIALS /c	per m000	-	100	800	800	1,200	1,000	1,000	4,800	82	-	1.0	6.2	8.3	12.4	10.3	10.3	48.5	-	1.2	7.7	11.8	15.9	13.8	14.0	64.2
2. LABOR																										
NURSERY LABOR	man-days	-	1,000	8,000	8,000	12,000	10,000	10,000	48,000	3	-	0.5	3.0	4.5	8.0	5.0	5.0	26.2	-	0.8	6.2	8.8	13.5	11.6	12.0	54.0
ENRICHMENT & ENCROACHMENT LABOR	man-days	-	10,000	80,000	80,000	120,000	120,000	120,000	520,000	3	-	5.0	30.2	45.3	80.4	80.4	80.4	301.7	-	8.7	62.2	97.8	134.8	128.2	144.2	585.8
SEED COLLECTION LABOR	man-days	-	1,000	6,000	8,000	12,000	12,000	12,000	52,000	3	-	0.5	3.0	4.5	8.0	8.0	8.0	28.2	-	0.8	6.2	9.8	13.5	12.8	14.4	58.7
Sub-total LABOR											-	6.0	36.2	54.4	72.5	71.5	71.5	312.0	-	10.4	74.6	117.5	161.7	154.7	170.8	698.5
Sub-total PLANTATION ESTABLISHMENT											-	7.1	41.4	63.8	84.8	81.8	81.8	361.9	-	11.7	82.3	129.2	177.8	178.3	186.8	763.8
Total INVESTMENT COSTS											-	182.7	202.1	191.5	254.0	287.4	261.4	1,380.1	-	267.2	291.2	293.9	398.0	461.4	442.1	2,113.8
II. RECURRENT COSTS																										
A. O & M																										
7 TON TRUCK	km.	-	24,000	48,000	48,000	48,000	48,000	48,000	264,000	2	-	7.4	14.8	14.8	14.8	14.8	14.8	81.3	-	8.7	18.0	18.2	18.5	18.8	19.8	101.8
TRACTOR	hr	-	1,000	1,500	1,825	1,825	1,875	2,000	9,825	35	-	8.8	9.8	9.8	11.8	11.3	12.8	58.1	-	7.8	10.5	12.8	13.7	14.4	15.5	74.8
MOTORCYCLE	km.	-	80,000	180,000	180,000	180,000	240,000	300,000	1,170,000	8	-	5.8	11.8	11.8	11.8	15.5	18.4	75.8	-	6.8	14.1	14.2	14.5	19.8	23.8	93.1
BUILDING MAINTENANCE	p.s.	-	-	-	-	-	-	-	-		-	1.3	3.8	7.1	10.4	12.7	16.2	52.3	-	2.8	8.5	13.1	18.8	27.1	33.1	101.8
Sub-total O & M											-	20.8	38.1	43.3	47.8	55.4	62.4	268.8	-	24.8	48.5	57.7	65.5	80.2	94.1	372.5
B. OTHER																										
ROAD MAINTENANCE LABOR	man-days	-	150	150	150	150	150	150	900	3	-	0.1	0.1	0.1	0.1	0.1	0.1	0.5	-	0.1	0.2	0.2	0.2	0.2	0.2	1.0
SHIFT ALLOWANCES	night	-	200	500	1,000	1,000	2,000	2,500	7,700	81	-	2.7	6.7	13.4	26.1	26.8	32.8	102.2	-	8.8	13.8	28.8	44.8	61.8	88.1	236.4
OFFICE CONSUMABLES	pa	-	4	13	28	38	58	97	181	288	-	0.2	0.7	1.3	2.0	2.7	2.8	9.8	-	0.2	0.8	1.9	2.8	3.5	4.8	12.9
Sub-total OTHER											-	3.0	7.5	14.8	28.2	29.8	35.8	112.8	-	9.8	14.8	30.8	47.7	65.8	84.3	248.2
Total RECURRENT COSTS											-	23.8	45.8	58.1	78.0	85.8	98.8	382.2	-	33.8	63.4	88.6	114.2	145.8	178.4	620.8
Total											-	206.2	248.7	249.8	324.8	372.4	360.4	1,762.4	-	288.8	355.8	382.5	512.2	607.1	620.5	2,734.6

/a Pumps, piping and tanks for 4 main nurseries & flying.
/b Two at start, then 1 per year.
/c Ley flat, seed, fertilizer, etc

May 20, 1987 13:00

Annex 3
Table 303

UGANDA
UGANDA FORESTRY REHABILITATION PROJECT
Table 304. NATURAL FOREST MANAGEMENT
CHARCOAL
Detailed Cost Table
(U. Sh. '000)

	Unit	Quantity								Unit Cost	Base Costs in $								Totals Including Contingencies (US$ '000)							
		0	1	2	3	4	5	6	Total		0	1	2	3	4	5	6	Total	0	1	2	3	4	5	6	Total
I. INVESTMENT COSTS																										
A. CIVIL WORKS																										
FOREST GUARD HOUSE	unit	-	2	2	-	-	-	-	4	12,376	-	4.1	4.1	-	-	-	-	8.3	-	4.9	5.1	-	-	-	-	10.1
FORESTER HOUSE	unit	-	1	1	-	-	-	-	2	92,631	-	15.5	15.5	-	-	-	-	30.9	-	18.5	19.3	-	-	-	-	37.7
UNIPORT	unit	-	1	1	-	-	-	-	2	10,521	-	1.8	1.8	-	-	-	-	3.5	-	2.1	2.2	-	-	-	-	4.3
Sub-Total CIVIL WORKS											-	21.4	21.4	-	-	-	-	42.7	-	25.5	26.6	-	-	-	-	52.1
B. MACHINERY & EQUIPMENT																										
4WD PICKUP	each	-	1	-	-	-	-	1	2	101,962	-	17.0	-	-	-	-	17.0	34.0	-	19.7	-	-	-	-	22.0	41.7
BICYCLES	each	-	2	2	2	-	-	-	6	884	-	0.3	0.3	0.3	-	-	-	0.9	-	0.3	0.4	0.4	-	-	-	1.1
SPARES (20%)	each	-	-	-	-	-	-	-	-		-	3.5	0.1	0.1	-	-	3.4	7.0	-	5.0	0.1	0.1	-	-	8.1	14.3
MENSURATION EQUIPMENT /a	set	-	2	2	-	-	-	-	4	408	-	0.1	0.1	-	-	-	-	0.3	-	0.2	0.2	-	-	-	-	0.3
OFFICE SUPPLIES & FIELD TOOLS	set	-	120	120	120	120	120	120	720	347	-	5.9	5.9	5.9	5.9	5.9	5.9	41.5	-	8.3	8.8	8.8	8.9	9.1	9.4	53.1
COMPASSES	set	-	25	-	-	-	-	-	25	330	-	1.4	-	-	-	-	-	1.4	-	1.6	-	-	-	-	-	1.6
OFFICE FURNITURE	each	-	3	3	-	-	-	-	6	381	-	0.2	0.2	-	-	-	-	0.4	-	0.3	0.3	-	-	-	-	0.6
UNIFORMS /b	set	-	4	4	4	4	4	4	24	302	-	0.2	0.2	0.2	0.2	0.2	0.2	1.2	-	0.3	0.4	0.4	0.4	0.5	0.5	2.5
Sub-Total MACHINERY & EQUIPMENT											-	29.6	7.8	7.5	7.1	7.1	27.5	86.7	-	38.7	10.0	9.7	9.3	9.6	40.1	115.4
C. TECHNICAL ASSISTANCE																										
EXPERT IN CHARCOAL MAKING MANAGEMENT IN NATURAL FORESTS	man-months	-	2	2	2	-	-	-	6	69,314	-	23.1	23.1	23.1	-	-	-	69.3	-	25.1	26.2	26.5	-	-	-	77.8
Sub-Total TECHNICAL ASSISTANCE											-	23.1	23.1	23.1	-	-	-	69.3	-	25.1	26.2	26.5	-	-	-	77.8
Total INVESTMENT COSTS											-	74.0	52.3	30.6	7.1	7.1	27.5	198.7	-	87.2	62.8	36.2	9.3	9.6	40.1	245.3
II. RECURRENT COSTS																										
A. O & M																										
4WD VEHICLE	km	-	12,000	15,000	15,000	15,000	15,000	15,000	87,000	2	-	2.9	3.7	3.7	3.7	3.7	3.7	21.2	-	3.4	4.4	4.5	4.6	4.7	4.8	26.4
BUILDING MAINTENANCE	p.a.	-	-	-	-	-	-	-	-		-	0.6	1.3	1.3	1.3	1.3	1.3	7.0	-	1.0	2.3	2.4	2.5	2.5	2.6	13.3
Sub-Total O & M											-	3.6	4.9	4.9	4.9	4.9	4.9	28.3	-	4.4	6.7	6.9	7.0	7.2	7.5	39.7
B. OTHER																										
NIGHT ALLOWANCES	night	-	100	100	100	100	100	100	600	81	-	1.3	1.3	1.3	1.3	1.3	1.3	8.1	-	2.3	2.8	2.9	3.0	3.1	3.2	17.3
OFFICE CONSUMABLES	pa	-	2	2	2	2	2	2	12	2/3	-	0.1	0.1	0.1	0.1	0.1	0.1	0.6	-	0.1	0.1	0.1	0.1	0.1	0.1	0.8
LABOR	man-days	-	920	920	920	920	920	920	5,520	3	-	0.5	0.5	0.5	0.5	0.5	0.5	2.8	-	0.8	1.0	1.0	1.0	1.1	1.1	6.0
Sub-Total OTHER											-	1.9	1.9	1.9	1.9	1.9	1.9	11.4	-	3.2	3.8	4.0	4.2	4.3	4.4	24.0
Total RECURRENT COSTS											-	5.5	6.9	6.9	6.9	6.9	6.9	39.7	-	7.7	10.5	10.9	11.2	11.5	11.9	63.7
Total											-	79.5	59.1	37.4	14.0	14.0	34.4	238.4	-	94.9	73.3	47.2	20.5	21.1	52.0	309.0

/a Measuring tapes, compasses, marking guns.
/b Two at start, then 1 per year.

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UGANDA
UGANDA FORESTRY REHABILITATION PROJECT
Table 305. NATURAL FOREST MANAGEMENT
LOGGING MANAGEMENT AND REVENUE COLLECTION
Detailed Cost Table
(U. Sh. '000)

	Unit	Quantity								Unit Cost	Base Costs in $								Totals Including Contingencies (US$ '000)							
		0	1	2	3	4	5	6	Total		0	1	2	3	4	5	6	Total	0	1	2	3	4	5	6	Total
I. INVESTMENT COSTS																										
A. CIVIL WORKS																										
FOREST GUARD HOUSE	unit	-	44	30	4	4	-	-	82	12,378	-	90.8	61.9	8.3	8.3	-	-	169.2	-	108.3	77.1	10.4	10.6	-	-	206.4
FORESTER HOUSE	unit	-	9	-	5	2	-	-	16	92,831	-	139.2	-	77.4	30.9	-	-	247.5	-	166.1	-	97.9	39.7	-	-	303.8
Sub-Total CIVIL WORKS											-	230.0	61.9	85.6	39.2	-	-	416.7	-	274.4	77.1	108.4	50.3	-	-	510.2
B. MACHINERY & EQUIPMENT																										
MOTORCYCLES (125 cc)	each	-	24	-	-	24	-	-	48	10,196	-	40.8	-	-	40.8	-	-	81.6	-	47.3	-	-	49.9	-	-	97.2
4WD PICKUP (1000 cc)	each	-	2	-	3	-	-	2	7	67,975	-	22.7	-	34.0	-	-	22.7	79.3	-	28.3	-	41.1	-	-	29.4	98.8
BICYCLES	each	-	114	100	4	118	100	4	440	884	-	16.6	14.7	0.6	17.4	14.7	0.6	64.8	-	19.5	17.6	0.7	21.3	18.5	0.8	78.3
SPARES (20%)	each	-	-	-	-	-	-	-	-	-	-	18.0	2.9	6.9	11.6	2.9	4.6	45.1	-	27.8	6.1	14.9	28.0	6.6	11.1	92.6
REHSORATION EQUIPMENT (LOGGING)	set	-	64	50	4	16	-	4	140	2,719	-	29.0	22.7	1.8	8.2	-	1.8	63.4	-	33.6	27.1	2.2	10.0	-	2.4	75.2
REHSORATION EQUIPMENT (UTILIZATION)	set	-	52	50	3	2	-	3	110	680	-	5.9	5.7	0.3	0.2	-	0.3	12.5	-	6.8	6.8	0.4	0.3	-	0.4	14.7
UNIFORMS /a	set	-	128	114	118	122	122	122	726	302	-	6.4	5.7	5.9	6.1	6.1	6.1	36.5	-	11.1	11.8	12.8	13.7	14.2	14.7	78.7
Sub-Total MACHINERY & EQUIPMENT											-	137.6	51.7	48.6	84.3	23.8	36.2	383.3	-	172.4	69.3	72.2	121.1	39.4	58.7	533.2
Total INVESTMENT COSTS											-	367.6	113.6	135.2	123.5	23.8	36.2	800.0	-	446.8	146.4	180.6	171.4	39.4	58.7	1,043.4
II. RECURRENT COSTS																										
A. O & M																										
4WD PICKUP (1000 cc)	km	-	30,090	30,000	75,000	75,000	75,000	75,000	360,000	1	-	4.5	4.5	11.3	11.3	11.3	11.3	54.3	-	5.3	5.5	12.9	14.1	14.4	14.9	66.1
MOTORCYCLE	km	-	288,000	288,000	288,000	288,000	288,000	288,000	1,728,000	1	-	37.2	37.2	37.2	37.2	37.2	37.2	223.4	-	43.6	45.1	45.8	48.4	47.5	49.1	277.5
BUILDING MAINTENANCE	p.a.	-	-	-	-	-	-	-	-	-	-	6.8	8.8	11.3	12.5	12.5	12.5	64.5	-	10.7	15.7	21.1	24.0	24.7	25.6	121.7
OFFICE CONSUMABLES	pa	-	18	18	23	27	27	27	138	308	-	0.8	0.8	1.2	1.4	1.4	1.4	7.0	-	1.0	1.0	1.5	1.8	1.8	1.9	9.0
Sub-Total O & M											-	49.5	51.3	61.1	62.4	62.4	62.4	349.2	-	60.6	67.3	82.3	88.2	88.4	91.5	476.3
B. LABOR & ALLOWANCES																										
LABOR	man-days	-	5,440	5,440	9,280	10,120	10,120	10,120	52,520	3	-	3.2	3.2	4.7	5.1	5.1	5.1	26.4	-	5.6	6.7	10.1	11.4	11.7	12.2	57.6
NIGHT ALLOWANCES	night	-	300	300	400	500	500	500	2,500	81	-	4.0	4.0	5.4	6.7	6.7	6.7	33.6	-	7.0	8.3	11.8	15.0	15.5	16.0	73.3
Sub-Total LABOR & ALLOWANCES											-	7.3	7.3	10.0	11.8	11.8	11.8	60.0	-	12.6	15.0	21.7	26.3	27.2	28.2	131.0
Total RECURRENT COSTS											-	56.8	58.6	71.1	74.2	74.2	74.2	409.2	-	73.2	82.3	104.0	112.5	115.6	119.7	607.3
Total											-	424.4	172.2	206.3	197.8	98.1	110.4	1,209.1	-	520.0	228.7	284.6	284.0	155.0	178.4	1,650.7

/a Two at start, then 1 per year.

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UGANDA
UGANDA FORESTRY REHABILITATION PROJECT
Table 306. NATURAL FOREST REHABILITATION
NATURAL FOREST CONSERVATION
Detailed Cost Table
US $m. '000)

	Unit	Quantity								Unit Cost	Base Costs in $								Totals Including Contingencies US$ '000)							
		0	1	2	3	4	5	6	Total		0	1	2	3	4	5	6	Total	0	1	2	3	4	5	6	Total
I. INVESTMENT COSTS																										
A. CIVIL WORKS																										
FOREST GUARD HOUSE	unit	-	2	3	3	4	-	-	12	12,378	-	4.1	5.2	6.2	8.3	-	-	24.8	-	4.9	7.7	7.8	10.6	-	-	31.1
UNIFORM	unit	-	2	3	3	4	-	-	12	10,521	-	3.5	5.3	5.3	7.0	-	-	21.0	-	4.2	6.6	6.7	9.0	-	-	26.4
Sub-Total CIVIL WORKS											-	7.6	11.4	11.4	15.2	-	-	45.8	-	9.1	14.3	14.5	19.6	-	-	57.5
B. MACHINERY & EQUIPMENT																										
4WD PICKUP	each	-	1	2	-	-	-	1	4	101,052	-	17.0	34.0	-	-	-	17.0	68.0	-	19.7	40.8	-	-	-	22.0	82.4
BICYCLES	each	-	2	3	3	6	3	3	20	884	-	0.2	0.4	0.4	0.9	0.4	0.4	2.9	-	0.3	0.5	0.5	1.1	0.6	0.6	3.6
SPARES (20%)	each	-	-	-	-	-	-	-	-	-	-	2.5	5.9	0.1	0.2	0.1	2.5	14.2	-	5.0	14.2	0.2	0.4	0.2	8.3	28.3
PANGAS	set	-	6	15	24	35	35	35	153	10	-	0.0	0.0	0.0	0.1	0.1	0.1	0.2	-	0.0	0.0	0.0	0.1	0.1	0.1	0.2
HOES	set	-	6	15	24	25	35	35	153	17	-	0.0	0.0	0.1	0.1	0.1	0.1	0.4	-	0.0	0.1	0.1	0.1	0.1	0.1	0.5
OFFICE FURNITURE	each	-	2	3	3	4	-	-	12	331	-	0.1	0.2	0.2	0.3	-	-	0.8	-	0.2	0.3	0.3	0.5	-	-	1.3
UNIFORMS /a	set	-	4	6	8	4	4	4	30	302	-	0.2	0.3	0.4	0.2	0.2	0.2	1.5	-	0.3	0.6	0.8	0.4	0.5	0.5	3.2
METAL NATURE RESERVE NOTICES	set	-	1,200	-	-	-	-	-	1,200	14	-	2.7	-	-	-	-	-	2.7	-	3.2	-	-	-	-	-	3.2
Sub-Total MACHINERY & EQUIPMENT											-	23.6	41.9	1.2	1.7	0.9	21.3	90.8	-	28.6	56.4	2.1	2.6	1.4	31.5	123.8
C. TECHNICAL ASSISTANCE																										
NATURE CONSERVATION OFFICER	M.M.	-	12	12	12	12	12	12	72	39,084	-	78.2	78.2	78.2	78.2	78.2	78.2	469.1	-	80.7	82.3	83.1	83.9	85.8	88.8	504.7
Sub-Total TECHNICAL ASSISTANCE											-	78.2	78.2	78.2	78.2	78.2	78.2	469.1	-	80.7	82.3	83.1	83.9	85.8	88.8	504.7
D. TRAINING																										
COURSES	man-months	-	3	-	-	-	-	-	3	13,031	-	6.5	-	-	-	-	-	6.5	-	7.4	-	-	-	-	-	7.4
AIR FARE	rt	-	1	-	-	-	-	-	1	13,031	-	2.2	-	-	-	-	-	2.2	-	2.5	-	-	-	-	-	2.5
Sub-Total TRAINING											-	8.7	-	-	-	-	-	8.7	-	9.9	-	-	-	-	-	9.9
Total INVESTMENT COSTS											-	118.3	131.5	90.9	95.1	79.1	99.5	614.4	-	129.4	152.9	99.7	106.1	87.2	120.5	695.8
II. RECURRENT COSTS																										
A. O & M																										
4WD PICKUP	km.	-	18,000	54,000	54,000	54,000	54,000	54,000	288,000	2	-	4.4	13.2	13.2	13.2	13.2	13.2	70.3	-	5.1	18.0	18.2	18.4	18.8	17.6	88.0
BUILDING MAINTENANCE	p.a.	-	-	-	-	-	-	-	-	-	-	0.2	0.6	0.9	1.4	1.4	1.4	5.8	-	0.4	1.0	1.7	2.6	2.7	2.8	11.2
Sub-Total O & M											-	4.6	13.8	14.1	14.6	14.6	14.6	76.2	-	5.5	17.0	17.9	19.0	19.5	20.2	99.2
B. LABOR	man-days	-	1,056	2,640	4,224	5,336	5,336	5,336	28,928	3	-	0.5	1.3	2.1	3.2	3.2	3.2	13.8	-	0.9	2.7	4.6	7.1	7.4	7.6	30.3
C. OTHER																										
NIGHT ALLOWANCES	night	-	100	300	300	300	300	300	1,000	21	-	1.3	4.0	4.0	4.0	4.0	4.0	21.5	-	2.3	6.3	6.7	9.0	9.3	9.6	47.2
OFFICE CONSUMABLES	pa	-	3	6	11	15	15	15	67	309	-	0.2	0.4	0.6	0.8	0.8	0.8	3.5	-	0.2	0.5	0.7	1.0	1.0	1.1	4.5
Sub-Total OTHER											-	1.5	4.4	4.6	4.8	4.8	4.8	24.9	-	2.5	6.8	9.4	10.0	10.3	10.7	51.7
Total RECURRENT COSTS											-	6.7	19.5	20.8	22.5	22.5	22.5	114.6	-	8.9	26.8	31.9	38.1	37.2	38.5	181.2
Total											-	125.0	151.0	111.7	117.7	101.5	122.0	729.0	-	138.3	181.4	131.5	142.3	124.4	158.9	877.0

/a Two at start, then 1 per year.

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UGANDA
UGANDA FORESTRY REHABILITATION PROJECT
Table 307. NATURAL FOREST REHABILITATION
FOREST INVENTORY
Detailed Cost Table
('000)

	Unit	Quantity								Unit Cost	Base Costs in $								Totals Including Contingencies (US$ '000)							
		0	1	2	3	4	5	6	Total		0	1	2	3	4	5	6	Total	0	1	2	3	4	5	6	Total
I. INVESTMENT COSTS																										
A. VEHICLES & EQUIPMENT																										
4 WD STATION WAGON	each	3	-	-	-	-	-	-	3	30,195	15.1	-	-	-	-	-	-	15.1	18.7	-	-	-	-	-	-	18.7
4 WD PICKUP	each	2	-	-	-	-	-	-	2	30,195	10.1	-	-	-	-	-	-	10.1	12.4	-	-	-	-	-	-	12.4
SPARES (20%)	each	-	-	-	-	-	-	-	-		5.0	-	-	-	-	-	-	5.0	5.2	-	-	-	-	-	-	5.2
TENTS	set	20	-	-	-	-	-	-	20	818	2.7	-	-	-	-	-	-	2.7	3.0	-	-	-	-	-	-	3.0
SLEEPING BAGS	set	60	6	6	-	-	-	-	72	408	4.1	0.4	0.4	-	-	-	-	4.8	4.5	0.5	0.5	-	-	-	-	5.5
COMPASSES	set	20	2	2	-	-	-	-	24	238	0.5	0.1	0.1	-	-	-	-	1.0	0.9	0.1	0.1	-	-	-	-	1.1
CLINOMETERS	set	20	2	2	-	-	-	-	24	204	0.7	0.1	0.1	-	-	-	-	0.8	0.8	0.1	0.1	-	-	-	-	0.9
DIAMETER TAPES	set	20	2	2	-	-	-	-	24	136	0.5	0.0	0.0	-	-	-	-	0.5	0.5	0.1	0.1	-	-	-	-	0.6
TAPES, 10 M	set	30	3	3	-	-	-	-	36	136	0.7	0.1	0.1	-	-	-	-	0.8	0.8	0.1	0.1	-	-	-	-	0.9
SURVEY CHAIN	set	20	2	2	-	-	-	-	24	204	0.7	0.1	0.1	-	-	-	-	0.8	0.8	0.1	0.1	-	-	-	-	0.9
CHAIN SAWS	set	2	-	-	-	-	-	-	2	3,739	1.2	-	-	-	-	-	-	1.2	1.4	-	-	-	-	-	-	1.4
MISC. TOOLS & EQUIP	set	1	0.2	0.2	-	-	-	-	1.4	7,178	1.2	0.2	0.2	-	-	-	-	1.7	1.3	0.3	0.3	-	-	-	-	1.9
DESKTOP COMPUTER (512 K)	set	2	-	-	-	-	-	-	2	67,975	22.7	-	-	-	-	-	-	22.7	25.3	-	-	-	-	-	-	25.3
SOFTWARE	set	1	1	-	-	-	-	-	2	40,785	6.8	6.8	-	-	-	-	-	13.6	7.6	7.9	-	-	-	-	-	15.5
MISC. DRAFTING EQUIP. /a	set	1	0.2	0.2	-	-	-	-	1.4	10,196	1.7	0.3	0.3	-	-	-	-	2.4	1.9	0.4	0.4	-	-	-	-	2.7
SATELLITE IMAGERY /b	set	10.5	10.5	-	-	-	-	-	21	11,420	20.0	20.0	-	-	-	-	-	40.0	22.3	23.2	-	-	-	-	-	45.4
AERIAL PHOTOGRAPHY /c	set	1	-	-	-	-	-	-	1	339,873	56.6	-	-	-	-	-	-	56.6	63.1	-	-	-	-	-	-	63.1
Sub-Total VEHICLES & EQUIPMENT											150.5	28.1	1.3	-	-	-	-	179.9	171.4	32.6	1.5	-	-	-	-	205.5
B. LABOR /d	man-days	3,240	3,600	2,700	-	-	-	-	8,540	3	1.6	1.8	1.4	-	-	-	-	4.8	2.0	3.1	2.8	-	-	-	-	7.9
C. MATERIALS																										
CARTOGRAPHY MATERIALS /e	unit	1	1	1	1	-	-	-	4	1,738	0.3	0.3	0.3	0.3	-	-	-	1.2	0.3	0.4	0.4	0.4	-	-	-	1.4
FIELD MATERIALS /f	unit	1	1	1	1	1	-	-	5	8,912	1.5	1.5	1.5	1.5	1.5	-	-	7.4	1.7	1.8	1.8	1.8	1.8	-	-	9.1
Sub-Total MATERIALS											1.8	1.8	1.8	1.8	1.5	-	-	8.6	2.0	2.1	2.2	2.2	1.8	-	-	10.5
D. TECHNICAL ASSISTANCE																										
INVENTORY SPECIALIST	man-months	9	5	2	-	-	-	-	16	57,782	88.6	48.1	19.3	-	-	-	-	154.0	88.3	52.2	21.8	-	-	-	-	162.3
COMPUTER PROGRAMMER	man-months	3	1	-	-	-	-	-	4	69,314	34.7	11.6	-	-	-	-	-	46.2	35.1	12.5	-	-	-	-	-	47.9
Sub-Total TECHNICAL ASSISTANCE											121.3	59.7	19.3	-	-	-	-	200.2	123.7	64.7	21.8	-	-	-	-	210.2
Total INVESTMENT COSTS											275.2	91.4	23.7	1.8	1.5	-	-	393.5	299.1	102.6	28.4	2.3	1.9	-	-	434.3
II. RECURRENT COSTS																										
A. VEHICLE O & M																										
4 WD SW	km.	54,000	60,000	54,000	-	-	-	-	168,000	2	13.2	14.7	13.2	-	-	-	-	41.0	14.7	17.2	16.0	-	-	-	-	47.9
4 WD PU	km.	54,000	60,000	54,000	-	-	-	-	168,000	2	13.2	14.7	13.2	-	-	-	-	41.0	14.7	17.2	16.0	-	-	-	-	47.9
Sub-Total VEHICLE O & M											26.4	29.3	26.4	-	-	-	-	82.1	29.5	34.3	32.0	-	-	-	-	95.8
B. ALLOWANCES																										
OFFICER/FORESTER	night	900	1,080	900	-	-	-	-	2,880	81	12.1	14.5	12.1	-	-	-	-	38.8	14.8	25.1	24.9	-	-	-	-	64.9
RANGER/GUARD	night	3,240	3,600	2,700	-	-	-	-	9,540	20	10.9	12.1	9.1	-	-	-	-	32.0	13.4	20.9	18.7	-	-	-	-	53.0
Sub-Total ALLOWANCES											22.9	26.6	21.1	-	-	-	-	70.7	28.4	46.0	43.5	-	-	-	-	117.9
Total RECURRENT COSTS											49.3	55.9	47.5	-	-	-	-	152.7	57.8	80.3	75.5	-	-	-	-	213.6
Total											324.5	147.2	71.2	1.8	1.5	-	-	546.3	356.9	182.9	103.8	2.3	1.9	-	-	647.9

/a Includes mirror stereoscopes (2), and pocket stereoscopes (15).
/b A set consists of 14 plates covering the entire country (US$ 120/plate).
/c Costed in Nairobi US$ 5/sq km. Approx. 700,000 ha need to be covered, including marginal high forest areas.
/d Used to cut lines and help establish plots.
/e Includes pens, stencils, tracing paper, scales, letter sets, and dot grids.
/f Includes field books, pencils, marking crayons, flagging and aluminum tags.

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UGANDA
UGANDA FORESTRY REHABILITATION PROJECT
Table 401. INDUSTRIAL SOFTWOODS PLANTATION REHABILITATION
Detailed Cost Table
(U. Sh. '000)

	Unit	Quantity								Unit Cost	Base Costs in $								Totals Including Contingencies US$ '000							
		0	1	2	3	4	5	6	Total		0	1	2	3	4	5	6	Total	0	1	2	3	4	5	6	Total
I. INVESTMENT COSTS																										
A. CIVIL WORKS																										
1. NURSERY																										
2HP PUMPS	each	-	8	-	-	-	-	-	8	5,005	-	5.0	-	-	-	-	-	5.0	-	5.8	-	-	-	-	-	5.8
WATER STORAGE TANKS, 1000 G. CAPACITY	each	-	12	-	-	-	-	-	12	1,882	-	3.8	-	-	-	-	-	3.8	-	4.5	-	-	-	-	-	4.5
POLYTHENE PIPING	set	-	6	-	-	-	-	-	6	2,548	-	2.5	-	-	-	-	-	2.5	-	3.0	-	-	-	-	-	3.0
STORE	each	-	6	-	-	-	-	-	6	4,005	-	4.1	-	-	-	-	-	4.1	-	4.9	-	-	-	-	-	4.9
ESTABLISHMENT LABOR	each	-	2,640	-	-	-	-	-	2,640	1	-	1.3	-	-	-	-	-	1.3	-	2.3	-	-	-	-	-	2.3
LABOR OVERSEERS	each		108	-	-	-	-	-	108	4	-	0.1	-	-	-	-	-	0.1	-	0.1	-	-	-	-	-	0.1
Sub-Total NURSERY											-	16.8	-	-	-	-	-	16.8	-	20.7	-	-	-	-	-	20.7
Sub-total CIVIL WORKS											-	16.8	-	-	-	-	-	16.8	-	20.7	-	-	-	-	-	20.7
B. NURSERY CONSUMABLES /a																										
1. BUILDING CONSTRUCTION																										
GUARDS HOUSE	set	-	10	8	-	-	-	-	18	12,378	-	29.8	16.5	-	-	-	-	37.1	-	34.6	36.6	-	-	-	-	45.2
FURNITURE	unit	-	10	8	-	-	-	-	18	2,094	-	5.2	4.7	-	-	-	-	9.3	-	6.2	5.1	-	-	-	-	11.3
WATER SUPPLY CONSTRUCTION (GRAVITY)	set	-	6	-	-	-	-	-	6	14,555	-	14.6	-	-	-	-	-	14.6	-	18.8	-	-	-	-	-	18.8
FIRETOWER CONSTRUCTION	set	-	8	8	-	-	-	-	14	8,977	-	9.0	12.0	-	-	-	-	20.9	-	12.9	19.3	-	-	-	-	32.1
Sub-Total BUILDING CONSTRUCTION											-	48.3	32.6	-	-	-	-	81.9	-	93.6	45.9	-	-	-	-	107.4
2. BUILDING REHABILITATION																										
FORESTERS HOUSE	set	-	6	3	-	-	-	-	9	23,298	-	23.2	11.6	-	-	-	-	34.8	-	27.7	14.5	-	-	-	-	42.1
GUARDS HOUSE	set	-	4	4	-	-	-	-	8	3,004	-	2.1	2.1	-	-	-	-	4.1	-	2.5	2.5	-	-	-	-	5.0
OFFICES	set	-	6	-	-	-	-	-	6	1,923	-	1.9	-	-	-	-	-	1.9	-	1.2	-	-	-	-	-	1.2
STORE	set	-	2	-	-	-	-	-	2	1,923	-	0.3	-	-	-	-	-	0.3	-	0.4	-	-	-	-	-	0.4
DOMESTIC WATER SUPPLY	system	-	6	-	-	-	-	-	6	4,406	-	6.4	-	-	-	-	-	6.4	-	8.2	-	-	-	-	-	8.2
Sub-Total BUILDING REHABILITATION											-	31.9	13.7	-	-	-	-	46.7	-	37.9	17.0	-	-	-	-	55.0
3. ROADS /b																										
ROADS CONSTRUCTION	km	-	-	6	6	6	6	6	30	23,170	-	-	23.2	23.2	23.2	23.2	23.2	139.0	-	-	30.1	29.7	31.2	32.0	33.1	157.0
ROAD REHABILITATION	km	-	15	27	53	37	35	43	210	5,753	-	16.5	28.1	51.2	35.7	33.8	41.5	209.7	-	17.8	33.9	67.8	48.1	48.9	59.3	273.3
Sub-Total ROADS /b											-	16.5	48.2	74.3	58.9	57.0	64.7	348.6	-	17.8	63.9	98.4	79.2	78.8	92.3	430.3
Sub-Total NURSERY CONSUMABLES /a											-	94.8	95.5	74.3	58.9	57.0	64.7	445.2	-	118.1	126.9	98.4	79.2	78.8	92.3	592.6
C. VEHICLES & EQUIPMENT																										
72 HP TRACTOR	each	-	8	-	-	-	-	-	8	125,948	-	125.9	-	-	-	-	-	125.9	-	157.7	-	-	-	-	-	157.7
4 TON TIPPING TRAILER	set	-	8	-	-	-	-	-	8	40,725	-	40.8	-	-	-	-	-	40.8	-	47.3	-	-	-	-	-	47.3
TOWED GRADER	set	-	4	-	-	-	-	-	4	88,307	-	38.9	-	-	-	-	-	38.9	-	88.3	-	-	-	-	-	88.3
4 WD PICKUP	each	-	2	-	-	-	-	-	2	101,982	-	24.0	-	-	-	-	-	24.0	-	28.4	-	-	-	-	-	28.4
MOTORCYCLES (125 CC)	each	-	14	-	-	14	-	-	28	10,195	-	23.5	-	-	-	23.6	-	47.6	-	27.5	-	-	-	28.1	-	55.7
BICYCLES	each	-	20	10	-	20	10	-	60	884	-	2.9	1.5	-	-	2.9	1.5	8.8	-	3.4	1.8	-	-	3.5	1.8	10.8
CHAINSAWS	set	-	10	8	22	8	10	8	66	3,738	-	6.2	5.6	14.3	5.0	6.2	5.0	42.4	-	7.2	6.7	17.3	6.1	7.8	6.5	51.6
SPARES (20%)	set	-	-	-	-	-	-	-	-	-	-	66.5	1.4	2.8	6.2	1.5	1.0	73.7	-	79.8	1.8	3.8	8.8	2.2	1.5	94.2
RADIOS	set	-	12	18	-	-	-	-	30	1,280	-	2.7	4.1	-	-	-	-	6.8	-	3.2	4.9	-	-	-	-	8.0
EQUIPMENT/SUPPLIES, NURSERY /c	set	-	3	3	1	1	1	-	9	2,478	-	1.2	1.2	0.4	0.4	0.4	-	3.7	-	1.5	1.5	0.5	0.5	0.5	-	4.8
EQUIPMENT/SUPPLIES, ESTABLISHMENT /d	set	-	-	3	3	1	1	1	9	42,998	-	-	21.5	21.5	7.2	7.2	7.2	64.4	-	-	30.7	27.2	9.2	9.4	9.7	82.2
TOOLS AND EQUIPMENT, FIREFIGHTING (LARGE UNITS) /e	each	-	7	0.7	0.7	0.7	0.7	0.7	10.5	27,381	-	32.5	3.3	3.3	3.3	3.3	3.3	48.5	-	38.8	4.1	4.1	4.2	4.3	4.4	55.9
TOOLS & EQUIPMENT, FIREFIGHTING (SMALL UNITS)	each	-	8	0.6	0.6	0.6	0.6	0.6	9	18,583	-	16.5	1.7	1.7	1.7	1.7	1.7	24.8	-	19.7	2.1	2.1	2.1	2.2	2.2	30.4

OFFICE EQUIPMENT /f	sum	-	1	0.2	0.2	0.2	0.2	0.2	2	43,171	-	7.2	1.4	1.4	1.4	1.4	1.4	14.4	-	9.1	2.6	2.0	2.0	2.1	2.2	19.4
OFFICE FURNITURE	sum	-	3	-	-	-	-	-	3	1,258	-	0.8	-	-	-	-	-	0.8	-	1.0	-	-	-	-	-	1.0
Sub-Total VEHICLES & EQUIPMENT											-	624.0	61.8	65.4	52.0	23.2	18.5	805.0	-	900.1	51.6	57.2	65.7	30.3	28.5	731.4
D. ESTABLISHMENT LABOR																										
SKILLED LABOR /g	man-days	-	4,000	13,000	21,000	43,700	62,650	80,500	212,550	3	-	2.6	8.9	14.0	22.6	31.5	34.4	107.6	-	3.5	14.3	20.3	40.1	72.7	72.7	243.5
LABOR OVERSEER	man-days	-	180	564	1,118	1,748	2,506	2,420	8,502	4	-	0.1	0.4	0.7	1.1	1.6	1.5	5.4	-	0.2	0.7	1.5	2.5	3.7	3.7	12.3
Sub-Total ESTABLISHMENT LABOR											-	3.1	7.3	14.8	23.1	33.1	32.0	112.4	-	3.7	15.0	31.9	51.6	78.4	76.4	256.8
E. PLANTATION SILVICULTURAL, PROTECTION																										
PRUNING (2ND	man-days	-	1,000	2,500	-	-	-	-	3,500	3	-	0.5	1.3	-	-	-	-	1.8	-	0.8	2.6	-	-	-	-	3.5
PRUNING (3RD	man-days	-	4,050	7,500	7,500	1,500	1,500	3,750	31,800	3	-	2.0	3.8	3.8	3.8	0.8	1.9	16.0	-	3.5	7.8	8.2	8.4	1.7	4.5	34.1
PRUNING (7TH)	man-days	-	-	-	-	-	4,050	7,500	11,550	3	-	-	-	-	-	2.0	3.8	5.8	-	-	-	-	-	4.7	8.0	12.7
ENABLING/THINNING	man-days	-	-	-	630	1,200	1,800	1,800	5,030	3	-	-	-	0.3	0.6	0.8	0.8	2.5	-	-	-	0.7	1.3	1.9	1.9	5.8
THINNING	man-days	-	-	-	3,780	7,200	9,000	9,000	30,180	3	-	-	-	1.9	3.8	4.8	4.8	15.2	-	-	-	4.1	8.1	11.1	11.5	34.8
FIRE PROTECTION	man-days	-	-	4,200	8,800	9,800	9,800	9,800	43,400	3	-	-	2.1	4.8	4.8	4.8	4.8	21.8	-	-	4.4	10.7	11.0	11.4	11.8	49.2
Sub-Total PLANTATION SILVICULTURAL, PROTECTION											-	2.5	7.1	10.8	12.8	13.4	15.2	63.1	-	6.4	14.7	23.8	28.8	30.8	38.7	141.1
F. TRAINING																										
OVERSEAS STUDY-TOURS	man-months	-	3	3	3	3	-	-	12	19,347	-	9.8	9.8	9.8	9.8	-	-	39.1	-	11.1	11.3	11.4	11.5	-	-	45.8
FELLOWSHIPS	man-months	-	-	12	-	-	-	-	12	12,031	-	-	20.1	-	-	-	-	20.1	-	-	20.2	-	-	-	-	20.2
Sub-Total TRAINING											-	9.8	29.8	9.8	9.8	-	-	59.2	-	11.1	31.5	11.4	11.5	-	-	75.5
G. TECHNICAL ASSISTANCE	man-months	-	3	2	2	2	-	0	9	89,314	-	34.7	23.1	22.1	22.1	-	-	104.6	-	27.6	26.2	26.0	27.0	-	-	119.3
Total INVESTMENT COSTS											-	529.7	210.5	178.2	170.8	128.6	122.4	1,412.3	-	885.7	274.9	248.1	253.8	215.1	234.0	1,933.8
II RECURRENT COSTS																										
A. VEHICLE OPERATION AND MAINTENANCE																										
72 HP TRACTOR/TRAILER	hr	-	-	1,000	3,000	3,000	4,200	4,200	17,000	25	-	-	10.8	21.7	21.7	25.3	25.3	104.7	-	-	13.1	26.6	27.0	32.2	33.3	132.2
4 WD PICKUP	km	-	20,000	30,000	38,000	38,000	40,000	40,000	202,000	2	-	4.9	7.2	8.6	8.8	9.8	9.8	48.2	-	5.7	8.9	10.8	10.9	12.4	12.9	61.7
MOTORCYCLES (100 CC)	km	-	-	140,000	170,000	170,000	170,000	170,000	820,000	0	-	-	9.1	11.0	11.0	11.0	11.0	53.0	-	-	11.0	13.5	13.7	14.0	14.5	66.7
CHAINSAWS	hr	-	13,000	23,000	47,000	40,000	40,000	28,000	193,000	4	-	9.3	18.5	34.1	30.7	28.7	21.5	138.0	-	10.9	20.0	41.8	35.8	30.6	28.4	173.7
Sub-Total VEHICLE OPERATION AND MAINTENANCE											-	14.2	43.7	75.6	70.2	74.8	67.6	348.1	-	16.7	53.0	92.9	87.4	89.3	89.1	434.6
B. OTHER O & M																										
BUILDING MAINTENANCE	p.s	-	-	-	-	-	-	-	-		-	1.5	2.5	2.5	2.5	2.5	2.5	13.8	-	2.3	4.4	4.8	4.7	4.9	5.0	25.9
ROAD MAINTENANCE LABOR	man-days	-	-	450	1,440	3,210	6,900	5,436	15,030	3	-	-	0.2	0.7	1.8	2.3	2.7	7.8	-	-	0.5	1.8	3.8	5.2	5.5	17.4
ROAD MAINTENANCE MATERIALS	sum	-	-	1	1	1	1	1	5	1,547	-	-	0.3	0.3	0.3	0.3	0.3	1.3	-	-	0.3	0.3	0.3	0.3	0.4	1.7
OFFICE CONSUMABLES	hg	-	8	8	8	8	8	8	38	2,688	-	2.7	2.7	2.1	2.7	2.7	2.7	16.2	-	3.4	3.7	3.8	3.8	3.8	4.1	22.6
Sub-Total OTHER O & M											-	4.2	5.8	6.1	7.0	7.7	8.1	38.8	-	5.7	8.8	10.2	12.5	14.3	15.0	67.6
C PLANTATION SILVICULTURAL, PROTECTION																										
PRUNING (2ND	man-days	-	1,000	2,500	-	-	-	-	3,500	3	-	0.5	1.3	-	-	-	-	1.8	-	0.8	2.6	-	-	-	-	3.5
PRUNING (3RD	man-days	-	4,050	7,500	7,500	1,500	1,500	3,750	31,800	3	-	2.0	3.8	3.8	3.8	0.8	1.9	16.0	-	3.5	7.8	8.2	8.4	1.7	4.5	34.1
PRUNING (7TH)	man-days	-	-	-	-	-	4,050	7,500	11,550	3	-	-	-	-	-	2.0	3.8	5.8	-	-	-	-	-	4.7	9.0	12.7
ENABLING/THINNING	man-days	-	-	-	630	1,200	1,800	1,800	5,030	3	-	-	-	0.3	0.6	0.8	0.8	2.5	-	-	-	0.7	1.3	1.9	1.9	5.8
THINNING	man-days	-	-	-	3,780	7,200	9,000	9,000	30,180	3	-	-	-	1.9	3.8	4.8	4.8	15.2	-	-	-	4.1	8.1	11.1	11.5	34.8
FIRE PROTECTION	man-days	-	-	4,200	9,800	9,800	9,800	9,800	43,400	3	-	-	2.1	4.8	4.8	4.8	4.8	21.8	-	-	4.4	10.7	11.0	11.4	11.8	49.2
Sub-Total PLANTATION SILVICULTURAL, PROTECTION											-	2.5	7.1	10.8	12.8	13.4	15.2	63.1	-	6.4	14.7	23.6	28.8	30.8	38.7	141.1
Total RECURRENT COSTS											-	20.9	56.5	92.6	90.1	95.8	92.0	449.0	-	28.8	76.6	126.8	128.7	140.4	143.9	643.1
Total											-	805.8	267.0	270.9	260.8	222.4	214.3	1,850.3	-	722.5	351.5	375.9	382.5	356.5	377.8	2,576.7

/a Includes Polythene tubes (TE200/1000 seedling), seed (4000), and fungicide (3000) Refer Table 7, Annex 3 1378 seedlings/ha + 20% costs
/b Contractors to be used
/c Includes 10 hoes (250 (2500), 12 pangas (12000), 8 trowels (1000), 5 watering cans (7500),
3 pickaxes (3300), 4 shovels (7900), 4 forks (7500) and 3 wheelbarrows (675000 per set Refer Table 3, Annex 3, Working Paper 5
/d Includes 150 pickaxes, 30 hoes, 60x30 m tapes (540000) 100 pangas, 100 shovels,
120 files (60000), 12 compasses (220000), 100 pruning saws (100000), and 60 bow saws (120000 per set Refer Table 4, Annex 3
/e Includes 10 axes (100000), 10 fire rakes (100000), 20 shovels 10 pulaski hoes (100000
1 water pump (1,500,000) 1x200 gal tank (300,000), 10 backpack pumps (230 000), 2 binoculars (410,000),
100 fire beaters (30000 per unit Refer table 9, Annex 3
/f Includes 2 programmable calculators (1,100,000), 10 hand calculators (30,000), and 2 typewriters (1,200,000 Refer table 6 Annex 3
/g Refer Tables 1 & 8, Annex 2, Working paper 5

UGANDA
UGANDA FORESTRY REHABILITATION PROJECT
Table 501: FOREST DEPARTMENT REHABILITATION
LOGISTICAL SUPPORT
Detailed Cost Table
('000)

	Unit	Quantity								Unit Cost	Base Costs in $								Totals Including Contingencies ('000 $)							
		0	1	2	3	4	5	6	Total		0	1	2	3	4	5	6	Total	0	1	2	3	4	5	6	Total
I INVESTMENT COSTS																										
A. VEHICLES																										
4WD VEHICLE, RFO	each	-	23	-	-	-	-	23	66	101,882	-	980.8	-	-	-	-	980.8	1,121.8	-	650.3	-	-	-	-	727.3	1,377.6
4WD VEHICLE, DFO	each	-	10	-	-	-	-	10	20	101,882	-	188.9	-	-	-	-	188.9	339.5	-	187.1	-	-	-	-	229.6	417.5
4WD (1600 cc), HQ	each	2	1	-	-	-	-	1	4	67,075	22.7	11.3	-	-	-	-	11.3	45.3	25.2	13.1	-	-	-	-	14.7	53.1
MOTORCYCLES (125 cc), DISTRICTS	each	10	-	-	-	33	-	-	51	10,188	33.6	-	-	-	98.1	-	-	38.7	34.1	-	-	-	68.7	-	-	102.8
MOTORCYCLES (125 cc), HQ	each	-	0	-	-	-	-	-	2	10,188	-	5.1	-	-	-	-	-	5.1	-	5.9	-	-	-	-	-	5.9
BICYCLES, DISTRICTS	each	26	-	-	-	-	-	-	26	888	5.3	-	-	-	-	-	-	5.3	5.9	-	-	-	-	-	-	5.9
7 TON TRUCKS	each	-	5	-	-	-	5	-	10	150,339	-	150.6	-	-	-	156.6	-	317.2	-	183.9	-	-	-	158.7	-	332.7
SPARES (20%)	each	-	-	-	-	-	-	-	-		11.7	181.3	-	-	11.2	31.7	148.4	384.2	14.5	313.6	-	-	25.0	73.1	184.3	709.3
Sub-Total VEHICLES											70.3	1,668.9	-	-	97.3	188.3	688.5	2,905.3	79.7	1,353.6	-	-	93.7	271.9	1,318.7	3,125.9
B. OFFICES																										
1. OUTLOOKS																										
REHABILITATION, EXTERN	m2	-	200	-	-	-	-	-	200	134	-	6.7	-	-	-	-	-	6.7	-	8.9	-	-	-	-	-	8.9
REHABILITATION, HARARA	m2	-	400	-	-	-	-	-	400	134	-	8.9	-	-	-	-	-	8.9	-	10.6	-	-	-	-	-	10.6
REHABILITATION, DISTRICTS /a	unit	-	8	8	8	-	-	-	24	8,913	-	11.8	11.8	11.8	-	-	-	35.6	-	14.2	16.8	15.8	-	-	-	46.8
NEW CONSTRUCTION, HARARA /b	unit	-	-	1	-	-	-	-	1	211,913	-	-	52.8	-	-	-	-	52.8	-	-	66.8	-	-	-	-	66.8
NEW CONSTRUCTION, DISTRICTS /c	unit	-	5	14	-	-	-	-	19	7,838	-	6.5	18.3	-	-	-	-	24.8	-	7.8	22.8	-	-	-	-	30.6
Sub-Total OUTLOOKS											-	34.8	82.2	11.8	-	-	-	128.1	-	48.8	102.3	15.8	-	-	-	166.8
2. OFFICE FURNITURE	each	8	84	48	28	12	-	-	178	1,288	1.3	13.8	18.8	8.4	2.8	-	-	38.8	1.8	22.3	18.8	18.8	5.2	-	-	88.5
3. OFFICE EQUIPMENT																										
DESK CALCULATORS	each	28	58	-	-	38	-	-	128	1,888	3.8	18.5	-	-	18.8	-	-	38.7	4.8	12.2	-	-	12.8	-	-	38.1
POCKET CALCULATORS																										
SOLAR POWERED	each	2	888	-	-	888	-	-	1,883	288	8.1	27.2	-	-	27.2	-	-	84.8	8.1	31.8	-	-	33.3	-	-	84.8
TYPEWRITERS	each	8	18	-	-	-	-	-	88	2,888	8.8	32.7	-	-	-	-	-	38.7	2.2	37.8	-	-	-	-	-	61.2
PHOTOCOPIERS	each	-	1	-	-	-	1	-	2	37,888	-	4.8	-	-	-	4.8	-	8.1	-	5.3	-	-	-	5.2	-	18.8
DUPLICATING MACHINE	each	1	18	-	-	-	18	-	21	2,888	8.8	5.1	-	-	-	5.1	-	18.7	8.8	5.8	-	-	-	5.8	-	12.8
Sub-Total OFFICE EQUIPMENT											7.8	88.8	-	-	37.7	8.8	-	134.8	8.8	82.8	-	-	48.2	12.1	-	188.1
Sub-Total OFFICES											8.8	127.8	82.8	28.3	48.8	8.8	-	288.4	8.8	188.7	122.2	31.8	51.4	12.1	-	382.8
C. PRELIMINARY FIELD EQUIPMENT																										
SURVEY EQUIPMENT /d	unit	75	-	-	-	-	-	-	75	2,488	8.8	-	-	-	-	-	-	8.8	8.2	-	-	-	-	-	-	8.2
RECONNAISSANCE EQUIPMENT /e	unit	28	-	28	-	28	-	28	128	2,882	88.8	-	58.8	-	88.8	-	88.8	272.8	38.7	-	72.8	-	22.7	-	25.8	82.8
FOREST ACTIVITY EQUIPMENT /f	unit	888	888	888	888	888	888	888	4,288	127	12.7	12.7	12.7	12.7	12.7	12.7	12.7	88.8	14.2	18.2	18.8	18.1	18.3	18.7	17.3	111.8
Sub-Total PRELIMINARY FIELD EQUIPMENT											38.7	12.7	71.2	12.7	31.2	12.7	31.2	188.4	61.1	18.2	88.8	18.1	48.8	18.7	42.4	218.4
D. STAFF HOUSING																										
NEW HOUSING, DISTRICTS	unit	-	-	18	-	-	-	-	18	88,831	-	-	184.7	-	-	-	-	184.7	-	-	282.7	-	-	-	-	282.7
NEW HOUSING, HARARA	unit	-	-	8	-	-	-	-	8	88,831	-	-	82.8	-	-	-	-	82.8	-	-	178.8	-	-	-	-	178.8
HOUSING REHABILITATION	unit	-	-	38	18	-	-	-	38	23,388	-	-	77.8	38.7	-	-	-	116.8	-	-	98.8	48.8	-	-	-	148.8
Sub-Total STAFF HOUSING											-	-	334.8	38.7	-	-	-	383.8	-	-	484.7	48.8	-	-	-	453.7
Total INVESTMENT COSTS											115.8	1,327.5	488.8	71.7	128.8	212.7	721.7	3,138.8	128.3	1,536.8	985.8	88.8	123.1	288.8	1,358.1	4,172.3
II. EQUIPMENT COSTS																										
A. VEHICLE O & M																										
4WD VEHICLES	km	-	750,000	750,000	750,000	750,000	750,000	750,000	4,550,000	1	-	104.8	104.8	104.8	104.8	104.8	104.8	1,107.7	-	218.2	222.8	227.8	238.8	235.3	343.5	1,375.7
4 WD 1600 CC VEHICLES	km	30,000	50,000	50,000	50,000	50,000	50,000	50,000	300,000	1	5.4	6.1	6.1	6.1	6.1	6.1	6.1	54.2	6.1	9.5	9.9	10.8	10.1	10.4	19.7	66.8
7 TON TRUCK	km	-	240,000	240,000	240,000	240,000	240,000	240,000	1,440,000	2	-	74.1	74.1	74.1	74.1	74.1	74.1	444.7	-	83.8	88.9	91.1	92.3	94.5	97.8	552.3

MOTORCYCLES	km	218,000	218,000	218,000	218,000	398,000	398,000	398,000	2,052,000	0	14.0	14.0	14.0	14.0	25.6	25.6	25.6	132.6	15.8	16.4	16.9	17.2	31.9	32.6	33.6	164.3
Sub-Total VEHICLE O & M											19.4	280.9	280.9	280.9	282.5	282.5	282.5	1,729.4	21.7	329.0	340.5	345.3	330.1	372.7	385.8	2,130.1
B. OFFICES																										
BUILDING MAINTENANCE /g	m2	-	2,300	2,800	3,500	3,900	3,900	3,900	18,900	17	-	6.5	7.4	9.9	9.9	9.9	9.9	53.7	-	9.4	11.9	16.6	17.0	17.5	18.1	90.4
OFFICE SUPPLIES & EQUIPMENT MAINTENANCE, HQ	sum	-	1	1	1	1	1	1	6	13,985	-	2.3	2.3	2.3	2.3	2.3	2.3	13.6	-	2.6	2.7	2.7	2.8	2.8	2.9	16.6
OFFICE SUPPLIES & EQUIPMENT MAINTENANCE, DISTRICTS	sum	-	43	43	43	43	43	43	258	680	-	4.9	4.9	4.9	4.9	4.9	4.9	29.2	-	5.5	5.8	5.9	6.0	6.1	6.3	35.6
Sub-Total OFFICES											-	13.7	14.5	17.1	17.1	17.1	17.1	96.9	-	17.6	20.4	25.2	25.7	26.4	27.4	142.8
C. ALLOWANCES																										
NIGHT ALLOWANCES	night	200	608	608	608	608	608	608	4,375	81	2.7	9.3	9.3	9.3	9.3	9.3	9.3	58.7	3.2	18.2	19.2	20.2	20.9	21.5	22.3	123.6
DSA ALLOWANCES	night	400	1,200	1,200	1,200	1,200	1,200	1,200	7,600	9	0.6	1.8	1.8	1.8	1.8	1.8	1.8	11.5	0.7	3.1	3.7	3.9	4.0	4.2	4.3	24.1
Sub-Total ALLOWANCES											3.3	11.2	11.2	11.2	11.2	11.2	11.2	70.2	4.1	18.3	22.0	24.1	24.9	25.7	26.6	147.6
Total RECURRENT COSTS											22.7	305.7	306.5	309.1	320.7	320.7	320.7	1,906.1	25.7	365.9	383.0	394.6	414.7	424.9	438.9	2,448.6
Total											138.1	1,533.2	785.4	280.8	450.5	533.4	1,243.4	5,042.8	156.5	1,866.5	948.7	481.3	380.6	723.5	1,768.9	6,321.8

/a Each unit, 80 m2.
/b Prefab building 300 m2
/c Two units of 75 m2 and includes a store of 20 m2
/d Includes hose (Sh. 2), 4 per nursery; watering cans (\$10), 2 per nursery; trowels (\$2), 2 per nursery; polythene bags (\$7/kg, 800 seedlings/kg). Handled by other components after PPF phase.
/e Compass (\$60), 2 per district; diameter tape (\$20), 4 per district; 10 meter tape (\$30), 20 per district; clinometer (\$30), 2 per district, marking equipment (\$30) per district.
/f Desk, pangas, misc. files: total \$22 per unit. To include other equipment as required.
/g 3% of construction costs p.a.

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UGANDA
UGANDA FORESTRY REHABILITATION PROJECT
Table 302. FOREST DEPARTMENT REHABILITATION
PLANNING AND MANAGEMENT
Detailed Cost Table
(U. Sh. '000)

	Unit	Quantity								Base Costs in $								Totals Including Contingencies (US$ '000)							
		0	1	2	3	4	5	6	Total	Unit Cost	0	1	2	3	4	5	6	Total	0	1	2	3	4	5	6	Total
I. INVESTMENT COSTS																											
A. SALARIES AND BENEFITS																											
PROJECT COORDINATOR	man-months	9	12	12	12	6	-	-	51	57,762	68.6	115.5	115.5	115.5	57.8	-	-	491.0	88.3	125.3	130.8	132.9	67.4	-	-	544.8
FINANCIAL CONTROLLER	man-months	3	12	12	12	6	-	-	45	57,762	28.9	115.5	115.5	115.5	57.8	-	-	433.2	29.4	125.3	130.8	132.9	67.4	-	-	485.9
SENIOR FOREST PLANNER	man-months	9	12	12	12	-	-	-	45	57,762	68.6	115.5	115.5	115.5	-	-	-	433.2	88.3	125.3	130.8	132.9	-	-	-	477.4
PROCUREMENT MANAGER	man-months	9	12	12	6	-	-	-	39	57,762	68.6	115.5	115.5	57.8	-	-	-	375.4	88.3	125.3	130.8	66.5	-	-	-	410.9
MONITORING & EVAL SPEC.	man-months	-	1	1	3	1	1	1	8	69,314	-	11.6	11.6	34.7	11.6	11.6	11.6	92.4	-	12.5	13.1	39.9	13.5	13.8	14.3	107.1
BUILDING SUPERVISOR	man-months	3	3	2	2	-	-	-	10	69,314	34.7	34.7	23.1	23.1	-	-	-	115.5	35.3	37.6	26.2	26.6	-	-	-	125.7
AUDITING OF ACCOUNTS	man-months	-	2	1.5	2	1.5	1.5	1.5	10	69,314	-	23.1	17.3	23.1	17.3	17.3	17.3	115.5	-	25.1	19.6	26.6	20.2	20.7	21.4	133.6
Sub-Total SALARIES AND BENEFITS											323.5	531.4	510.1	485.2	144.4	28.9	28.9	2,058.3	329.8	578.4	582.1	558.4	168.9	34.5	35.7	2,285.4
B VEHICLES																											
4 WD VEHICLE	each	3	-	-	-	-	-	-	3	30,195	15.1	-	-	-	-	-	-	15.1	18.7	-	-	-	-	-	-	18.7
Sub-Total VEHICLES											15.1	-	-	-	-	-	-	15.1	18.7	-	-	-	-	-	-	18.7
C ENCROACHMENT STUDY																											
FOREST ECONOMIST	man-months	-	3	-	-	-	-	-	3	9,059	-	4.5	-	-	-	-	-	4.5	-	7.1	-	-	-	-	-	7.1
SOCIOLOGIST	man-months	-	3	-	-	-	-	-	3	9,059	-	4.5	-	-	-	-	-	4.5	-	7.1	-	-	-	-	-	7.1
STUDENT ENUMERATORS	man-months	-	15	-	-	-	-	-	15	1,912	-	5.1	-	-	-	-	-	5.1	-	8.0	-	-	-	-	-	8.0
Sub-Total ENCROACHMENT STUDY											-	14.2	-	-	-	-	-	14.2	-	22.3	-	-	-	-	-	22.3
D. MILLING & LOGGING EQUIPMENT INVENTORY																											
SAWMILL OPERATION SPECIALIST	man-months	2	-	-	-	-	-	-	2	69,314	23.1	-	-	-	-	-	-	23.1	23.8	-	-	-	-	-	-	23.8
Sub-Total MILLING & LOGGING EQUIPMENT INVENTORY											23.1	-	-	-	-	-	-	23.1	23.8	-	-	-	-	-	-	23.8
E FOREST INVENTORY /a	man-months	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. TIMBER MARKETING STUDY																											
MECHANICAL WOOD PRODUCTS ANALYST	man-months	4	-	-	-	-	-	-	4	69,314	68.2	-	-	-	-	-	-	68.2	47.1	-	-	-	-	-	-	47.1
PULP MARKET ANALYST	man-months	3	-	-	-	-	-	-	3	69,314	34.7	-	-	-	-	-	-	34.7	35.3	-	-	-	-	-	-	35.3
Sub-Total TIMBER MARKETING STUDY											80.9	-	-	-	-	-	-	80.9	82.4	-	-	-	-	-	-	82.4
Total INVESTMENT COSTS											442.5	545.6	510.1	485.2	144.4	28.9	28.9	2,189.5	454.5	588.8	582.1	558.4	168.9	34.5	35.7	2,432.3
II RECURRENT COSTS																											
VEHICLE O & M	km.	40,000	54,000	54,000	54,000	54,000	-	-	256,000	2	9.8	13.2	13.2	13.2	13.2	-	-	62.5	10.9	15.4	16.0	16.2	16.4	-	-	75.0
Total RECURRENT COSTS											9.8	13.2	13.2	13.2	13.2	-	-	62.5	10.9	15.4	16.0	16.2	16.4	-	-	75.0
Total											452.3	558.8	527.3	498.4	157.6	28.9	28.9	2,252.1	465.4	614.1	598.1	574.6	184.9	34.5	35.7	2,507.3

/a See table 706.

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UGANDA
UGANDA FORESTRY REHABILITATION PROJECT
Table 503. RESEARCH
SEED COLLECTION AND DISTRIBUTION
Detailed Cost Table
(U. Sh. '000)

	Unit	Quantity								Unit Cost	Base Costs in $								Totals Including Contingencies (US$ '000)							
		0	1	2	3	4	5	6	Total		0	1	2	3	4	5	6	Total	0	1	2	3	4	5	6	Total
I INVESTMENT COSTS																										
A VEHICLES																										
4 WD PICKUP	each	-	1	1	-	-	-	-	2	101,952	-	17.0	17.0	-	-	-	-	34.0	-	19.7	20.3	-	-	-	-	40.0
SPARES (20%)	each	-	-	-	-	-	-	-	-		-	3.4	3.4	-	-	-	-	6.8	-	5.9	7.0	-	-	-	-	12.9
LADDERS (EXTENSION)	set	-	50	-	-	-	-	-	50	272	-	2.3	-	-	-	-	-	2.3	-	2.6	-	-	-	-	-	2.6
TREE BICYCLE	set	-	2	-	-	-	2	-	4	340	-	0.1	-	-	-	0.1	-	0.2	-	0.1	-	-	-	0.1	-	0.3
SIEVES	set	-	6	-	-	5	-	-	11	340	-	0.3	-	-	0.3	-	-	0.6	-	0.4	-	-	0.3	-	-	0.7
SANS	set	-	8	-	3	-	3	-	14	68	-	0.1	-	0.0	-	0.0	-	0.2	-	0.1	-	0.0	-	0.0	-	0.2
REFRIGERATOR	set	-	2	-	-	-	-	-	2	6,798	-	2.3	-	-	-	-	-	2.3	-	2.6	-	-	-	-	-	2.6
COLD STORE EQUIPMENT	set	-	2	-	-	-	-	-	2	13,595	-	4.5	-	-	-	-	-	4.5	-	5.3	-	-	-	-	-	5.3
GERMINATION SETS	set	-	4	2	-	-	2	2	10	680	-	0.5	0.2	-	-	0.2	0.2	1.1	-	0.5	0.3	-	-	0.3	0.3	1.4
SCALES	set	-	4	-	-	-	2	-	6	680	-	0.5	-	-	-	0.2	-	0.7	-	0.5	-	-	-	0.3	-	0.8
Sub-Total VEHICLES											-	30.9	20.6	0.0	0.3	0.5	0.2	52.7	-	37.8	27.6	0.0	0.3	0.8	0.3	66.8
B CIVIL WORKS /a																										
STORE, REHABILITATION	unit	-	1	-	-	-	-	-	1	61,887	-	10.3	-	-	-	-	-	10.3	-	12.3	-	-	-	-	-	12.3
STORE, NEW	unit	-	1	-	-	-	-	-	1	82,517	-	13.8	-	-	-	-	-	13.8	-	16.4	-	-	-	-	-	16.4
FORESTERS HOUSE	unit	-	1	-	-	-	-	-	1	92,831	-	15.5	-	-	-	-	-	15.5	-	18.5	-	-	-	-	-	18.5
FOREST GUARD HOUSE	unit	-	2	-	-	-	-	-	2	12,378	-	4.1	-	-	-	-	-	4.1	-	4.9	-	-	-	-	-	4.9
Sub-Total CIVIL WORKS /a											-	43.7	-	-	-	-	-	43.7	-	52.1	-	-	-	-	-	52.1
C STUDY TOURS	man-months	-	-	3	3	-	-	-	6	20	-	-	0.0	0.0	-	-	-	0.0	-	-	0.0	0.0	-	-	-	0.0
Total INVESTMENT COSTS											-	74.6	20.6	0.0	0.3	0.5	0.2	96.4	-	89.9	27.6	0.1	0.3	0.8	0.3	118.9
II RECURRENT COSTS																										
VEHICLE O & M	km	-	10,000	20,000	30,000	30,000	30,000	30,000	150,000	2	-	2.4	4.8	7.3	7.3	7.3	7.3	36.6	-	2.9	5.9	9.0	9.1	9.3	9.7	45.9
BUILDING MAINTENANCE	p.a	-	-	1	1	1	1	1	5	5,975	-	-	1.0	1.0	1.0	1.0	1.0	5.0	-	-	1.6	1.7	1.7	1.8	1.8	8.5
MATERIALS /b	kg	-	1	1	1	1	1	1	6	17	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total RECURRENT COSTS											-	2.4	5.9	8.3	8.3	8.3	8.3	41.6	-	2.9	7.5	10.7	10.8	11.1	11.5	54.5
Total											-	77.0	26.5	8.4	8.6	8.9	8.6	138.0	-	92.7	35.1	10.7	11.2	11.8	11.8	173.4

/a New store and accomodation in west
/b Includes petri dishes, containers, labels, and stationery

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UGANDA
UGANDA FORESTRY REHABILITATION PROJECT
Table 504. RESEARCH
SILVICULTURE AND AGROFORESTRY
Detailed Cost Table
('000)

	Unit	Quantity								Unit Cost	Base Costs in $								Totals Including Contingencies (US$ '000)							
		0	1	2	3	4	5	6	Total		0	1	2	3	4	5	6	Total	0	1	2	3	4	5	6	Total
I. INVESTMENT COSTS																										
A. VEHICLES & EQUIPMENT																										
4 WD PICKUP	each	-	1	-	-	-	-	-	1	101,952	-	17.0	-	-	-	-	-	17.0	-	19.7	-	-	-	-	-	19.7
SPARES (20%)	each	-	-	-	-	-	-	-	-		-	3.4	-	-	-	-	-	3.4	-	3.9	-	-	-	-	-	3.9
FIELD EQUIPMENT /a	sum	-	1	-	-	0.5	-	-	1.5	3,399	-	0.8	-	-	0.3	-	-	0.8	-	0.7	-	-	0.3	-	-	1.0
CALCULATORS	set	-	2	-	-	2	-	2	6	340	-	0.1	-	-	0.1	-	0.1	0.3	-	0.1	-	-	0.1	-	0.1	0.4
CALCULATORS (PROGRAMMABLE)	set	-	2	-	-	-	-	-	2	5,438	-	1.8	-	-	-	-	-	1.8	-	2.1	-	-	-	-	-	2.1
BOOKS	sum	-	1	0.2	0.2	0.2	0.2	0.2	2	33,987	-	5.7	1.1	1.1	1.1	1.1	1.1	11.3	-	6.8	1.4	1.4	1.4	1.4	1.5	13.8
SOIL TESTING EQUIPMENT	sum	-	1	-	-	0.5	-	-	1.5	2,039	-	0.3	-	-	0.2	-	-	0.5	-	0.4	-	-	0.2	-	-	0.6
Sub-Total VEHICLES & EQUIPMENT											-	28.9	1.1	1.1	1.7	1.1	1.2	35.2	-	39.6	1.4	1.4	2.1	1.4	1.6	43.3
B. TECHNICAL ASSISTANCE	man-months	-	-	4	1	-	1	-	6	69,314	-	-	46.2	11.6	-	11.6	-	69.3	-	-	52.3	13.3	-	13.8	-	79.4
Total INVESTMENT COSTS											-	28.9	47.3	12.7	1.7	12.7	1.2	104.5	-	39.6	53.7	14.7	2.1	15.2	1.6	122.7
II. RECURRENT COSTS																										
A. O & M																										
4WD PICKUP	km.	-	-	10,000	15,000	15,000	15,000	15,000	70,000	2	-	-	2.4	3.7	3.7	3.7	3.7	17.1	-	-	3.0	4.5	4.6	4.7	4.8	21.5
BUILDING MAINTENANCE	p.a.	-	1	1	1	1	1	1	6	11,221	-	1.9	1.9	1.9	1.9	1.9	1.9	11.2	-	2.7	3.0	3.1	3.2	3.3	3.4	18.7
Sub-Total O & M											-	1.9	4.3	5.5	5.5	5.5	5.5	28.3	-	2.7	6.0	7.6	7.8	8.0	8.2	40.2
B. MATERIALS																										
SEED	kg	-	-	4	2	2	-	-	8	2,039	-	-	1.4	0.7	0.7	-	-	2.7	-	-	1.8	0.8	0.8	-	-	3.3
FERTILIZER	50 kg	-	-	4	4	-	-	-	8	170	-	-	0.1	0.1	-	-	-	0.2	-	-	0.1	0.1	-	-	-	0.3
OFFICE/FIELD CONSUMABLES	ps	-	1	1	1	1	1	1	6	2,039	-	0.3	0.3	0.3	0.3	0.3	0.3	2.0	-	0.4	0.4	0.4	0.4	0.4	0.4	2.5
Sub-Total MATERIALS											-	0.3	1.8	1.1	1.0	0.3	0.3	5.0	-	0.4	2.2	1.4	1.2	0.4	0.4	6.0
Total RECURRENT COSTS											-	2.2	6.1	6.7	6.6	5.9	5.9	33.3	-	3.1	8.1	9.0	9.0	8.4	8.7	46.3
Total											-	31.1	53.5	19.4	8.3	18.6	7.1	137.8	-	38.5	61.8	23.7	11.1	23.6	10.3	169.0

/a Includes tapes, calipers, axes, saws

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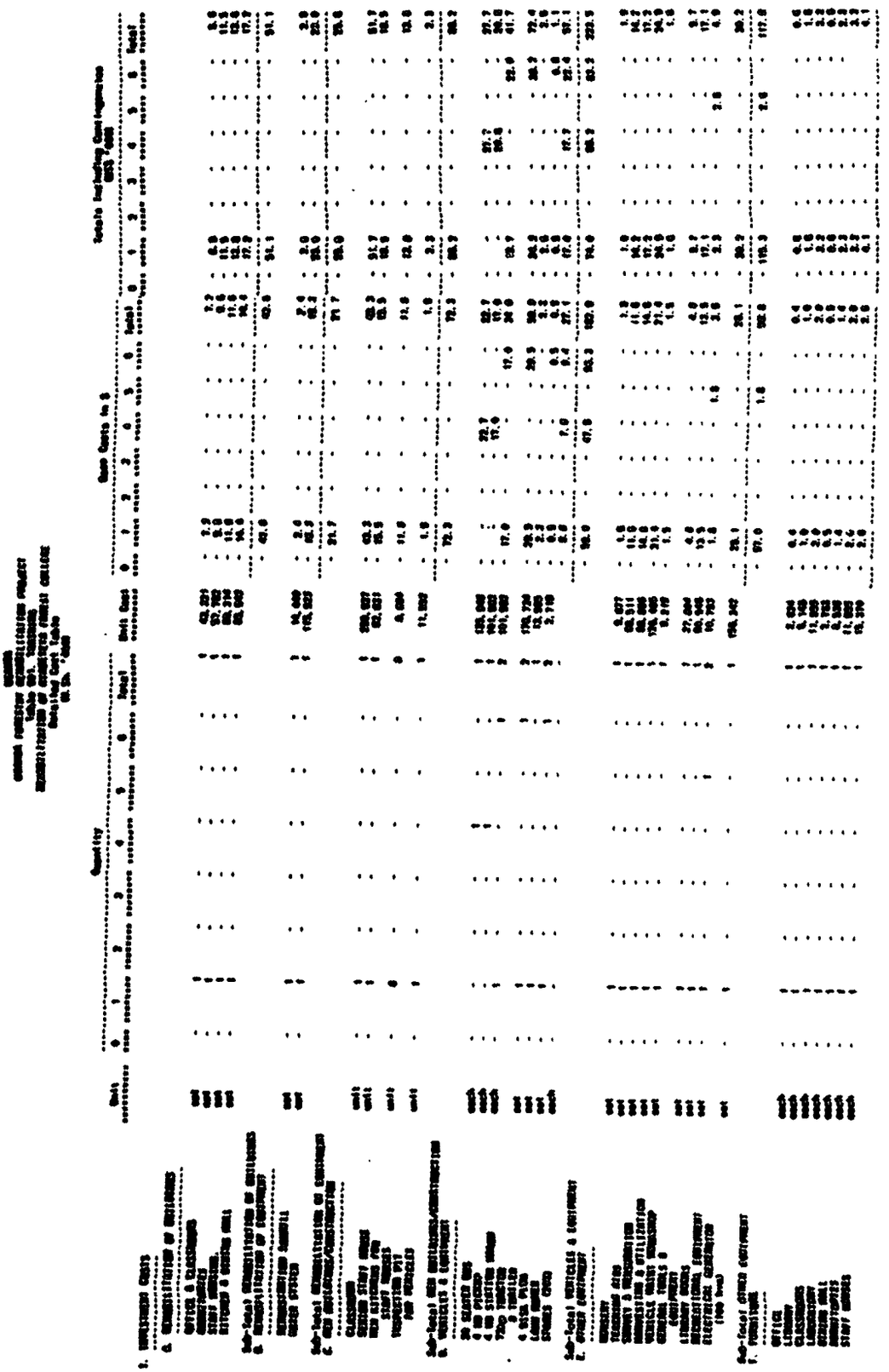

Sub-Total FURNITURE											-	9.9	-	-	-	-	-	9.9	-	15.7	-	-	-	-	-	15.7
G. TECHNICAL ASSISTANCE																									
FORESTRY TRAINING SPECIALIST	man-months	9	12	12	-	-	-	-	33	57,782	88.6	115.5	115.5	-	-	-	-	317.7	88.3	129.3	130.8	-	-	-	-	348.4
SHORT-TERM INTERNATIONAL CONSULTANTS	man-months	-	-	-	2	-	2	-	4	89,314	-	-	-	23.1	-	23.1	-	46.2	-	-	-	26.8	-	27.8	-	54.2
SHORT-TERM NATIONAL CONSULTANTS	man-months	-	-	-	2	-	2	-	4	9,059	-	-	-	3.0	-	3.0	-	6.0	-	-	-	5.9	-	6.3	-	12.3
Sub-Total TECHNICAL ASSISTANCE											88.6	115.5	115.5	26.1	-	26.1	-	369.9	88.3	129.3	130.8	32.5	-	33.9	-	410.9
H. TRAINING																									
1. OVERSEAS																									
PRINCIPAL STUDY TOUR ABROAD	man-months	-	-	-	3	-	-	-	3	19,547	-	-	-	9.8	-	-	-	9.8	-	-	-	11.4	-	-	-	11.4
LECTURER SOCIAL FORESTRY FELLOWSHIP	man-months	-	9	-	-	-	-	-	9	13,031	-	19.5	-	-	-	-	-	19.5	-	22.2	-	-	-	-	-	22.2
Sub-Total OVERSEAS											-	19.5	-	9.8	-	-	-	29.3	-	22.2	-	11.4	-	-	-	33.6
2. INSERVICE TRAINING COURSES																									
PROFESSIONAL (DFO & FO) MANAGEMENT /a	mm	-	-	10	10	10	10	10	50	2,818	-	-	4.7	4.7	4.7	4.7	4.7	23.5	-	-	9.7	10.2	10.5	10.8	11.2	52.3
FORESTERS /b	mm	-	-	40	40	40	40	40	200	2,818	-	-	18.8	18.8	18.8	18.8	18.8	93.9	-	-	38.7	40.8	41.9	43.3	44.9	209.4
FOREST RANGERS /c	mm	-	-	60	60	60	60	60	300	2,818	-	-	28.2	28.2	28.2	28.2	28.2	140.9	-	-	58.0	60.9	62.9	65.0	67.3	314.1
FOREST GUARDS /d	mm	-	-	30	30	30	30	30	150	2,818	-	-	14.1	14.1	14.1	14.1	14.1	70.5	-	-	29.0	30.5	31.4	32.5	33.6	157.0
ORIENTATION COURSES & WORKSHOPS /e	mm	-	-	25	25	25	25	25	125	2,818	-	-	11.7	11.7	11.7	11.7	11.7	58.7	-	-	24.2	25.4	26.2	27.1	28.0	130.9
Sub-Total INSERVICE TRAINING COURSES											-	-	77.5	77.5	77.5	77.5	77.5	387.5	-	-	159.6	167.5	173.0	178.7	185.0	863.7
Sub-Total TRAINING											-	19.5	77.5	87.3	77.5	77.5	77.5	416.8	-	22.2	159.6	178.9	173.0	178.7	185.0	897.4
Total INVESTMENT COSTS											88.6	437.7	193.0	113.4	125.1	105.4	133.8	1,199.1	88.3	515.7	290.4	211.4	239.2	215.2	268.2	1,828.6
II RECURRENT COSTS																									
A. VEHICLE O & M																									
BUS	km	-	-	-	12	12	12	12	48	3	-	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0
4WD PU ASH	km	-	12,000	12,000	24,000	24,000	24,000	24,000	120,000	2	-	2.9	2.9	5.9	5.9	5.9	5.9	29.3	-	3.4	3.5	7.2	7.3	7.5	7.7	36.7
72hp TRACTOR	hr	-	600	600	600	600	600	600	3,600	36	-	3.6	3.6	3.6	3.6	3.6	3.6	21.7	-	4.2	4.4	4.4	4.5	4.6	4.8	26.9
LAWNMOWER	hr	-	500	500	500	500	500	500	3,000	10	-	0.8	0.8	0.8	0.8	0.8	0.8	4.8	-	0.9	1.0	1.0	1.0	1.0	1.1	6.0
Sub-Total VEHICLE O & M											-	7.3	7.3	10.3	10.3	10.3	10.3	55.8	-	8.6	8.9	12.6	12.8	13.1	13.6	69.6
B. BUILDING MAINTENANCE																									
OFFICES & CLASSROOMS	pa	-	-	1	1	1	1	1	5	11,362	-	-	1.9	1.9	1.9	1.9	1.9	9.5	-	-	3.0	3.2	3.2	3.3	3.4	16.2
DORMITORIES	pa	-	-	1	1	1	1	1	5	10,941	-	-	1.8	1.8	1.8	1.8	1.8	9.1	-	-	2.9	3.0	3.1	3.2	3.3	15.5
STAFF HOUSING	pa	-	-	1	1	1	1	1	5	29,198	-	-	3.4	3.4	3.4	3.4	3.4	16.8	-	-	5.4	5.6	5.8	5.9	6.1	28.8
KITCHEN & DINING ROOM	pa	-	-	1	1	1	1	1	5	10,941	-	-	1.8	1.8	1.8	1.8	1.8	9.1	-	-	2.9	3.0	3.1	3.2	3.3	15.6
Sub-Total BUILDING MAINTENANCE											-	-	8.9	8.9	8.9	8.9	8.9	44.5	-	-	14.3	14.9	15.2	15.7	16.2	76.3
C. MACHINERY O & M																									
SAWMILL	hr	-	-	500	500	500	500	500	2,500	31	-	-	2.6	2.6	2.6	2.6	2.6	12.9	-	-	3.2	3.3	3.3	3.4	3.5	16.7
15hp WATER PUMP	hr	-	-	-	1,200	1,200	1,200	1,200	4,800	19	-	-	-	3.7	3.7	3.7	3.7	14.9	-	-	-	4.7	4.8	4.9	5.1	19.4
GENERATOR	hr	-	-	1,400	1,400	1,400	1,400	1,400	7,000	56	-	-	13.0	13.0	13.0	13.0	13.0	65.0	-	-	16.2	16.5	16.7	17.1	17.7	84.1
Sub-Total MACHINERY O & M											-	-	15.6	19.3	19.3	19.3	19.3	92.7	-	-	19.4	24.4	24.8	25.4	26.2	120.2
D. MATERIALS																									
PERIODICALS	pa	-	1	1	1	1	1	1	6	10,196	-	1.7	1.7	1.7	1.7	1.7	1.7	10.2	-	2.0	2.0	2.1	2.1	2.1	2.2	12.5
COURSE MATERIALS	pa	-	1	1	1	1	1	1	6	11,585	-	1.9	1.9	1.9	1.9	1.9	1.9	11.6	-	2.4	2.5	2.6	2.6	2.7	2.8	15.5
Sub-Total MATERIALS											-	3.6	3.6	3.6	3.6	3.6	3.6	21.8	-	4.3	4.5	4.6	4.7	4.8	5.0	27.9
Total RECURRENT COSTS											-	11.0	35.5	42.1	42.1	42.1	42.1	214.9	-	13.0	47.2	56.5	57.5	58.9	61.0	294.1
Total											88.6	448.7	228.5	155.5	167.2	147.5	175.9	1,414.0	88.3	528.7	337.6	268.0	296.7	274.1	329.2	2,122.6

/a 20 two week courses per annum.
/b 20 two month courses per annum.
/c 30 two month courses per annum.
/d 60 two week courses per annum.
/e 100 one week courses per annum.

UGANDA
UGANDA FORESTRY REHABILITATION PROJECT
Table 602. TRAINING
WOOD UTILIZATION - KARAMA
Detailed Cost Table
(U. Sh. '000)

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	Unit	Quantity								Unit Cost	Base Costs in $								Totals Including Contingencies (US$ '000)							
		0	1	2	3	4	5	6	Total		0	1	2	3	4	5	6	Total	0	1	2	3	4	5	6	Total
I INVESTMENT COSTS																										
A. CIVIL WORKS																										
1. MILL STRUCTURE REHABILITATION																										
CONCRETE	ton	-	31	-	-	-	-	-	31	1,303	-	6.7	-	-	-	-	-	6.7	-	7.6	-	-	-	-	-	7.6
STEEL	kg	-	1,000	-	-	-	-	-	1,000	7	-	1.7	-	-	-	-	-	1.7	-	2.0	-	-	-	-	-	2.0
LUMBER & POSTS	m3	-	25	-	-	-	-	-	25	1	-	0.0	-	-	-	-	-	0.0	-	0.0	-	-	-	-	-	0.0
CONSTRUCTION LABOR	unit	-	8,150	-	-	-	-	-	8,150	0	-	8.4	-	-	-	-	-	8.4	-	10.0	-	-	-	-	-	10.0
Sub-Total MILL STRUCTURE REHABILITATION											-	16.8	-	-	-	-	-	16.8	-	19.8	-	-	-	-	-	19.8
Sub-Total CIVIL WORKS											-	16.8	-	-	-	-	-	16.8	-	19.8	-	-	-	-	-	19.8
B. VEHICLES & EQUIPMENT																										
1. NEW																										
6Mtn THIN BAND	set	-	1	-	-	-	-	-	1	237,911	-	39.7	-	-	-	-	-	39.7	-	46.8	-	-	-	-	-	46.8
CARRIAGE (3 HEADBLOCK)	set	-	1	-	-	-	-	-	1	348,071	-	57.8	-	-	-	-	-	57.8	-	67.0	-	-	-	-	-	67.0
TOWSPER CASES	unit	-	3	-	-	-	-	-	3	10,198	-	5.1	-	-	-	-	-	5.1	-	5.9	-	-	-	-	-	5.9
4WD PICKUP (1000 cc)	set	-	1	-	-	-	-	-	1	97,975	-	11.3	-	-	-	-	-	11.3	-	13.1	-	-	-	-	-	13.1
CHAINSAWS	set	-	6	-	3	-	3	-	12	3,728	-	3.7	-	1.9	-	1.9	-	7.5	-	4.3	-	2.3	-	2.3	-	8.9
7 TON TRUCK	set	-	1	-	-	-	-	-	1	190,329	-	31.7	-	-	-	-	-	31.7	-	36.6	-	-	-	-	-	36.6
SPARES (20%)	mach	-	1	-	-	-	-	-	1		-	9.4	-	0.8	-	0.4	-	10.1	-	15.2	-	0.8	-	0.9	-	17.9
Sub-Total NEW											-	158.7	-	2.2	-	2.2	-	183.2	-	189.3	-	3.1	-	3.2	-	195.6
2. REPAIR																										
LOG CARTOY	set	-	1	-	-	-	-	-	1	6,798	-	1.1	-	-	-	-	-	1.1	-	1.2	-	-	-	-	-	1.2
LOG TURNER	set	-	1	-	-	-	-	-	1	38,083	-	6.3	-	-	-	-	-	9.3	-	7.4	-	-	-	-	-	7.4
RESAW 30hp MOTOR	set	-	1	-	-	-	-	-	1	10,894	-	2.8	-	-	-	-	-	2.8	-	3.3	-	-	-	-	-	3.3
TRIM SAW	set	-	1	-	-	-	-	-	1	88,337	-	14.7	-	-	-	-	-	14.7	-	17.1	-	-	-	-	-	17.1
SAWDUST EXTRACTOR	set	-	1	-	-	-	-	-	1	25,630	-	4.3	-	-	-	-	-	4.3	-	5.0	-	-	-	-	-	5.0
HEADSAW (stenner)	set	-	1	-	-	-	-	-	1	9,177	-	1.5	-	-	-	-	-	1.5	-	1.8	-	-	-	-	-	1.8
SAWS Dia 17 GAUGE	m	-	50	-	-	50	-	-	100	82	-	0.7	-	-	-	0.7	-	1.4	-	0.8	-	-	-	0.8	-	1.5
SAWS Dia 19 GAUGE	m	-	50	-	-	-	50	-	100	48	-	0.4	-	-	-	-	0.4	0.8	-	0.5	-	-	-	-	0.5	1.0
EQUIPMENT SPARES	sum	-	1	-	-	-	-	-	1	74,228	-	12.4	-	-	-	-	-	12.4	-	14.3	-	-	-	-	-	14.3
CAT 518 REHAB	set	-	1	-	-	-	-	-	1	220,318	-	37.4	-	-	-	-	-	37.4	-	43.4	-	-	-	-	-	43.4
TIRES	sum	-	1	-	-	-	-	-	1	57,000	-	9.5	-	-	-	-	-	9.5	-	11.0	-	-	-	-	-	11.0
Sub-Total REPAIR											-	91.2	-	-	-	0.7	0.4	92.3	-	105.8	-	-	-	0.8	0.5	107.1
3. TOOLS																										
MISC. TOOLS /a	sum	-	1	-	0.2	-	0.2	-	1.4	15,314	-	2.7	-	0.5	-	0.5	-	3.8	-	3.2	-	0.7	-	0.7	-	4.5
CHISELS, CHAINS, WIRES	sum	-	1	0.1	0.1	0.1	0.1	0.1	1.5	7,748	-	1.3	0.1	0.1	0.1	0.1	0.1	1.9	-	1.5	0.2	0.2	0.2	0.2	0.2	2.3
Sub-Total TOOLS											-	4.0	0.1	0.7	0.1	0.7	0.1	5.7	-	4.7	0.2	0.8	0.2	0.8	0.2	6.8
4 OFFICE & TEACHING MATERIALS	sum	-	1	0.5	0.5	0.5	0.5	0.5	3.5	2,000	-	0.4	0.2	0.2	0.2	0.2	0.2	1.8	-	0.5	0.3	0.3	0.3	0.3	0.3	2.2
Sub-Total VEHICLES & EQUIPMENT											-	254.4	0.4	3.1	1.0	3.5	0.6	262.8	-	308.4	0.5	4.2	1.3	4.5	0.5	319.7
C. TECHNICAL ASSISTANCE																										
SAWMILL DESIGN AND OPERATIONS SPECIALIST	man-months	-	8	6	-	-	-	-	14	97,762	-	77.0	57.8	-	-	-	-	134.8	-	83.5	85.4	-	-	-	-	168.9
SAWDOCTOR INSTRUCTOR	man-months	-	-	3	3	-	-	-	6	88,314	-	-	34.7	34.7	-	-	-	88.3	-	-	39.2	39.8	-	-	-	79.1
LOGGING INSTRUCTOR	man-months	-	-	3	3	-	-	-	6	88,314	-	-	34.7	34.7	-	-	-	88.3	-	-	39.2	39.8	-	-	-	79.1
Sub-Total TECHNICAL ASSISTANCE											-	77.0	127.1	88.3	-	-	-	273.4	-	83.5	163.8	79.8	-	-	-	327.2
D. STUDY TOURS	man-months	-	-	17	11	-	-	-	28	19,545	-	-	35.4	35.8	-	-	-	81.2	-	-	84.1	81.9	-	-	-	166.0
Total INVESTMENT COSTS											-	348.3	189.8	188.2	1.0	3.5	0.6	844.3	-	483.5	288.9	125.8	1.3	4.9	0.5	784.8

II. RECURRENT COSTS																									
A. O & M																									
BUILDING	p.a.	-	-	1	1	1	1	1	5	2,020	-	-	0.3	0.3	0.3	0.3	0.3	1.7	-	-	0.5	0.6	0.6	0.6	0.6	2.9
CHAINSAWS	hr	-	-	1,800	1,800	1,800	1,800	1,800	9,000	7	-	-	2.2	2.2	2.2	2.2	2.2	11.1	-	-	2.8	2.8	2.9	2.9	3.0	14.4
7 TON TRUCK	km	-	5,000	10,000	10,000	10,000	10,000	10,000	55,000	3	-	2.2	4.3	4.3	4.3	4.3	4.3	23.7	-	2.5	5.2	5.3	5.4	5.5	5.7	29.6
4WD (1600 cc)	km	-	5,000	15,000	15,000	15,000	15,000	15,000	80,000	1	-	0.8	2.3	2.3	2.3	2.3	2.3	12.1	-	0.9	2.7	2.8	2.8	2.9	3.0	15.1
Sub-Total O & M											-	2.9	9.1	9.1	9.1	9.1	9.1	48.8	-	3.4	11.3	11.5	11.6	11.9	12.3	62.0
Total RECURRENT COSTS											-	2.9	9.1	9.1	9.1	9.1	9.1	48.8	-	3.4	11.3	11.5	11.6	11.9	12.3	62.0
Total											-	351.2	191.9	117.4	10.2	12.7	9.5	692.9	-	498.9	210.7	137.3	12.9	16.8	12.6	898.5

/a Sawsaw, crosscut saws, spare sawblades, wedges, axes.

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FORESTRY REHABILITATION PROJECT

INCREMENTAL BENEFITS FROM PROJECT

000 U.Sh.

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
HARDWOOD (000 m3 roundwood) /a														
ENCROACHMENTS /b	-	-	-	-	-	-	-	-	-	-	-	-	-	-
REFINING /c	18.00	23.00	28.00	29.00	31.00	32.00	32.00	33.00	33.00	34.00	34.00	35.00	35.00	36.00
ENRICHMENT /d	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IMPROVED UTILIZATION /e	7.90	10.00	10.60	11.50	12.60	13.20	13.80	13.80	14.10	14.10	14.40	14.40	14.70	14.70
TOTAL HARDWOOD	25.90	33.00	38.60	40.50	43.60	45.20	45.80	46.80	47.10	48.10	48.40	49.40	49.70	50.70
PRICE PER m3 /f	223.70	223.70	223.70	223.70	223.70	223.70	223.70	223.70	223.70	223.70	223.70	223.70	223.70	223.70
BENEFITS FROM HARDWOOD	5793830.00	7382100.00	8634820.00	9059850.00	9753320.00	10111240.00	10245460.00	10469160.00	10536270.00	10759970.00	10827080.00	11050780.00	11117890.00	11341590.00
SOFTWOOD (000 m3 roundwood)														
THINNING	6.50	14.50	25.50	56.50	61.00	30.00	-	-	-	-	-	-	-	-
CLEAR FELLING	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAVINGS - WINDFALL														
PROTECTION /g	-	-	-	0.40	0.50	0.60	0.70	0.80	1.30	1.40	1.60	1.70	1.80	1.90
IMPROVED UTILIZATION /h	3.50	4.50	9.00	13.50	19.00	23.00	25.00	26.00	27.00	28.00	29.00	30.00	32.00	33.00
TOTAL SOFTWOOD	10.00	19.00	44.50	70.40	80.50	53.60	25.70	26.80	28.30	29.40	30.60	31.70	33.80	34.90
PRICE PER m3 (express -export parity price)	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00
PRICE PER m3 (other sizes -export parity price)	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00
BENEFITS FROM SOFTWOOD	1170000.00	2223000.00	5206500.00	8236800.00	9418500.00	6271200.00	3006900.00	3135600.00	3311100.00	3439980.00	3580200.00	3708900.00	3954600.00	4083300.00
CHARCOAL (000 tons)														
CONIFERS /i	1.00	2.00	4.00	6.00	8.00	6.00	-	-	-	-	-	-	-	-
ENCROACHMENTS /j	-	-	-	-	-	-	1.00	4.00	9.00	12.00	12.00	12.00	1.00	6.00
REFINING /k	15.00	20.00	25.00	26.00	29.00	29.00	29.00	30.00	30.00	31.00	31.00	32.00	32.00	33.00
ENRICHMENT /l	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL CHARCOAL	16.00	22.00	29.00	32.00	36.00	35.00	30.00	34.00	39.00	43.00	43.00	44.00	33.00	39.00
PRICE PER TON /m	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00
BENEFITS FROM CHARCOAL	288000.00	396000.00	522000.00	576000.00	648000.00	630000.00	540000.00	648000.00	702000.00	774000.00	774000.00	792000.00	594000.00	702000.00
FUELWOOD (000 m3 stacked)														
PERI-URBAN PLANT.	13.40	20.00	20.00	20.00	29.70	32.10	8.80	8.80	10.20	26.06	16.50	16.50	16.50	16.50
PRIVATE FUELWOOD														
PLANTATION PLANTING	-	6.70	13.40	26.70	40.10	49.70	5.80	11.70	17.50	20.50	18.40	18.40	18.40	18.40
SOCIAL FORESTRY	-	-	-	-	191.20	270.50	363.00	424.20	782.70	948.30	567.00	714.50	869.50	567.00
TOTAL FUELWOOD	13.40	26.70	33.40	46.70	260.50	352.30	378.40	444.70	810.40	995.60	601.90	749.40	904.40	601.90
PRICE PER m3 /n	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
BENEFITS FROM FUELWOOD	48240.00	96120.00	120240.00	168120.00	937800.00	1268280.00	1362240.00	2320920.00	2917440.00	3584160.00	2166840.00	2697840.00	3255840.00	2166840.00
POLES (000 poles)														
CLASS ONE														
PERI-URBAN	20.00	30.00	30.00	30.00	224.00	322.00	287.00	287.00	334.00	871.00	537.00	537.00	537.00	537.00
PRIVATE PLANT.	-	10.00	20.00	40.00	60.00	166.00	191.00	382.00	573.00	669.00	598.00	598.00	598.00	598.00
SOCIAL FORESTRY	-	-	-	-	614.30	869.30	1169.30	2006.30	2515.90	3048.00	1822.50	2196.50	2794.90	1822.50
TOTAL CLASS ONE	20.00	40.00	50.00	70.00	898.30	1357.30	1647.30	2675.30	3422.90	4588.00	2957.50	3431.50	3929.90	2957.50
PRICE PER POLE /o	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
REVENUES FROM CLASS ONE POLES	7200.00	14400.00	18000.00	25200.00	323388.00	488628.00	593028.00	963108.00	1232244.00	1651680.00	1064700.00	1235340.00	1414764.00	1064700.00
CLASS TWO														
PERI-URBAN	12.00	18.00	18.00	18.00	174.00	251.00	230.00	230.00	268.00	698.00	430.00	430.00	430.00	430.00
PRIVATE PLANT.	-	6.00	12.00	24.00	36.00	119.00	153.00	306.00	479.00	538.00	478.00	478.00	478.00	478.00
SOCIAL FORESTRY	-	-	-	-	614.30	869.30	1169.30	2006.30	2515.90	3048.00	1822.50	2196.50	2794.90	1822.50
TOTAL CLASS TWO	12.00	24.00	30.00	42.00	824.30	1239.30	1552.30	2542.30	3262.90	4284.00	2730.50	3104.50	3702.90	2730.50
PRICE PER POLE	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
REVENUES FROM CLASS TWO POLES	5280.00	10560.00	13200.00	18480.00	362692.00	545292.00	683012.00	1118617.00	1435676.00	1884960.00	1201420.00	1409980.00	1629276.00	1201420.00
CLASS THREE														
PERI-URBAN	8.00	12.00	12.00	12.00	14.00	14.00	-	-	-	-	-	-	-	-
PRIVATE PLANT.	-	4.00	8.00	16.00	24.00	28.00	-	-	-	-	-	-	-	-
TOTAL CLASS THREE	8.00	16.00	20.00	28.00	38.00	42.00	-	-	-	-	-	-	-	-
PRICE PER POLE	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
BENEFITS FROM CLASS THREE POLES	5920.00	11840.00	14800.00	20720.00	28120.00	31080.00	-	-	-	-	-	-	-	-
TOTAL INCREMENTAL BENEFITS	7318470.00	19134020.00	14529560.00	18105170.00	21471820.00	19345720.00	16438640.00	18655400.00	20134730.00	22094570.00	19614240.00	20894840.00	21966370.00	20559850.00

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FORESTRY REHABILITATION PROJECT

INCREMENTAL BENEFITS FROM PROJECT

000 U.SH.

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
HARDWOOD (000 m3 roundwood)													
ENCROACHMENTS /b	-	-	-	-	-	-	-	-	-	-	-	-	-
REFINING /c	36.00	37.00	37.00	38.00	38.00	39.00	39.00	40.00	40.00	41.00	41.00	42.00	42.00
ENRICHMENT /d	-	-	-	-	-	-	-	-	-	-	-	-	-
IMPROVED UTILIZATION /e	15.00	15.00	15.30	15.30	15.60	15.60	15.90	15.90	16.20	16.20	16.50	16.50	16.80
TOTAL HARDWOOD	51.00	52.00	52.30	53.30	53.60	54.60	54.90	55.90	56.20	57.20	57.50	58.50	58.80
PRICE PER m3 /f	223.70	223.70	223.70	223.70	223.70	223.70	223.70	223.70	223.70	223.70	223.70	223.70	223.70
BENEFITS FROM HARDWOOD	11408700.00	11632400.00	11699510.00	11923210.00	11990320.00	12214020.00	12281130.00	12504830.00	12571940.00	12795640.00	12862750.00	13086450.00	13153560.00
SOFTWOOD (000 m3 roundwood)													
THINNING	-	8.00	14.00	20.00	28.00	40.00	-	20.00	35.00	50.00	70.00	100.00	-
CLEAR FELLING	-	-	-	-	-	-	-	-	-	-	-	-	40.00
SAVINGS - WINDFALL													
PROTECTION /g	0.90	1.00	1.00	1.10	1.20	-	-	-	-	-	-	-	-
IMPROVED UTILIZATION /h	34.00	35.00	37.00	38.00	40.00	41.00	42.50	44.00	46.00	48.00	50.00	52.00	54.00
TOTAL SOFTWOOD	34.90	44.00	52.00	59.10	69.20	81.00	42.50	64.00	81.00	98.00	120.00	152.00	94.00
PRICE PER m3 (cypress -export parity price)	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00
PRICE PER m3 (other pine -export parity price)	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00
BENEFITS FROM SOFTWOOD	4083300.00	5148000.00	6084000.00	6914700.00	8096400.00	9477000.00	4972500.00	7488000.00	9477000.00	11466000.00	14040000.00	17784000.00	10998000.00
CHARCOAL (000 tons)													
CONCTERS /i	-	-	-	-	-	-	-	-	-	-	-	-	-
ENCROACHMENTS /j	9.00	12.00	12.00	12.00	1.00	4.00	9.00	12.00	12.00	12.00	1.00	6.00	9.00
REFINING /k	33.00	34.00	34.00	35.00	35.00	36.00	36.00	37.00	37.00	38.00	38.00	39.00	39.00
ENRICHMENT /l	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL CHARCOAL	42.00	46.00	46.00	47.00	36.00	42.00	45.00	49.00	49.00	50.00	39.00	45.00	48.00
PRICE PER TON /m	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00
BENEFITS FROM CHARCOAL	756000.00	828000.00	828000.00	846000.00	648000.00	756000.00	810000.00	882000.00	882000.00	900000.00	702000.00	810000.00	864000.00
FUELWOOD (000 m3 stacked)													
PERI-URBAN PLANT.	16.50	16.50	16.50	14.90	14.90	14.90	13.40	13.40	13.40	13.40	13.40	12.00	12.00
PRIVATE FUELWOOD													
PLANTATION PLANTING	18.40	18.40	18.40	18.40	16.70	16.70	16.70	16.70	15.00	15.00	15.00	15.00	13.40
SOCIAL FORESTRY	714.50	869.50	511.10	691.80	839.20	497.10	623.80	756.40	443.10	555.80	673.50	285.60	341.30
TOTAL FUELWOOD	749.40	904.40	546.00	725.10	870.80	528.70	653.90	786.50	471.50	584.20	701.90	312.60	366.70
PRICE PER m3 /n	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
BENEFITS FROM FUELWOOD	2697840.00	3255840.00	1965600.00	2610360.00	3134880.00	1903320.00	2354040.00	2831400.00	1697400.00	2103120.00	2526840.00	1125360.00	1320120.00
POLES (000 poles)													
CLASS ONE													
PERI-URBAN	537.00	537.00	537.00	483.00	483.00	483.00	435.00	435.00	435.00	392.00	392.00	392.00	392.00
PRIVATE PLANT.	598.00	598.00	598.00	598.00	538.00	538.00	538.00	538.00	484.00	484.00	484.00	484.00	436.00
SOCIAL FORESTRY	2296.50	2794.90	1771.50	2223.80	2697.40	1597.80	2005.10	2431.10	1424.30	1786.50	2164.90	918.00	1096.90
TOTAL CLASS ONE	3431.50	3929.90	2906.50	3304.80	3718.40	2618.80	2978.10	3404.10	2343.30	2662.50	3040.90	1794.00	1924.90
PRICE PER POLE /o	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
REVENUES FROM CLASS ONE POLES	1235340.00	1414764.00	1046340.00	1189728.00	1338624.00	942768.00	1072116.00	1225476.00	843588.00	958500.00	1094724.00	645840.00	692964.00
CLASS TWO													
PERI-URBAN	430.00	430.00	430.00	387.00	387.00	387.00	387.00	348.00	348.00	348.00	348.00	313.00	313.00
PRIVATE PLANT.	478.00	478.00	478.00	478.00	430.00	430.00	430.00	430.00	387.00	387.00	387.00	387.00	379.00
SOCIAL FORESTRY	2296.50	2794.90	1771.50	2223.80	2697.40	1597.80	2005.10	2431.10	1424.30	1786.50	2164.90	918.00	1096.90
TOTAL CLASS TWO	3204.50	3702.90	2679.50	3088.80	3514.40	2414.80	2822.10	3209.10	2159.30	2521.50	2899.90	1618.00	1788.90
PRICE PER POLE	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
REVENUES FROM CLASS TWO POLES	1409980.00	1629276.00	1178980.00	1359072.00	1546336.00	1062512.00	1241724.00	1412004.00	950092.00	1109460.00	1275956.00	711920.00	787116.00
CLASS THREE													
PERI-URBAN	-	-	-	-	-	-	-	-	-	-	-	-	-
PRIVATE PLANT.	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL CLASS THREE	-	-	-	-	-	-	-	-	-	-	-	-	-
PRICE PER POLE	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
BENEFITS FROM CLASS THREE POLES	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL INCREMENTAL BENEFITS	21591160.00	23930200.00	22802430.00	24943070.00	26759560.00	26353620.00	22731510.00	26343710.00	26422020.00	29332720.00	32502270.00	34163570.00	27815760.00

UGANDA

FORESTRY REHABILITATION PROJECT

INCREMENTAL BENEFITS FROM PROJECT

000 U.SH.

	2015	2016	2017	2018	2019	2020	2021	2022	2023
HARDWOOD (000 m3 roundwood) /a									
ENCROACHMENTS /b	-	-	-	45.00	300.00	450.00	600.00	600.00	600.00
REPLANTING /c	41.00	41.00	44.00	44.00	45.00	45.00	46.00	46.00	47.00
ENRICHMENT /d	-	-	-	42.00	210.00	315.00	420.00	420.00	420.00
IMPROVED UTILIZATION /e	16.80	17.10	17.10	17.40	17.40	17.60	17.60	17.90	17.90
TOTAL HARDWOOD	57.80	60.10	61.10	148.40	572.40	827.60	1083.60	1083.90	1084.90
PRICE PER m3 /f	223.70	223.70	223.70	223.70	223.70	223.70	223.70	223.70	223.70
BENEFITS FROM HARDWOOD	13377260.00	13444370.00	13668070.00	33197000.00	128045890.00	185144120.00	242401320.00	242468430.00	242692130.01
SOFTWOOD (000 m3 roundwood)									
THINNING	-	-	-	-	-	-	-	-	-
CLEAR FELLING	76.00	100.00	140.00	200.00	-	-	-	-	-
SAVINGS - WINDFALL									
PROTECTION /g	-	-	-	-	-	-	-	-	-
IMPROVED UTILIZATION /h	50.00	50.00	61.00	61.00	65.00	68.00	71.00	74.00	77.00
TOTAL SOFTWOOD	126.00	150.00	201.00	261.00	65.00	68.00	71.00	74.00	77.00
PRICE PER m3 (pinewood -export parity price)	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00
PRICE PER m3 (other pine -export parity price)	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00
BENEFITS FROM SOFTWOOD	14742000.00	19406000.00	23517900.00	30771000.00	7603000.00	7956000.00	8307000.00	8658000.00	9009000.00
CHARCOAL (000 tons)									
CONIFERS /i	-	-	-	-	-	-	-	-	-
ENCROACHMENTS /j	12.00	12.00	12.00	1.00	6.00	9.00	12.00	12.00	12.00
REPLANTING /k	40.00	40.00	41.00	41.00	42.00	42.00	43.00	43.00	44.00
ENRICHMENT /l	-	-	-	2.00	10.00	15.00	20.00	20.00	20.00
TOTAL CHARCOAL	52.00	52.00	53.00	44.00	58.00	66.00	75.00	75.00	76.00
PRICE PER TON /m	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00
BENEFITS FROM CHARCOAL	936000.00	936000.00	954000.00	792000.00	1044000.00	1188000.00	1350000.00	1350000.00	1368000.00
FUELWOOD (000 m3 stacked)									
PERI-URBAN PLANT.	12.00	12.00	-	-	-	-	-	-	-
PRIVATE FUELWOOD									
PLANTATION PLANTING	13.40	13.40	13.40	-	-	-	-	-	-
SOCIAL FORESTRY	393.80	-	-	-	-	-	-	-	-
TOTAL FUELWOOD	419.20	25.40	13.40	-	-	-	-	-	-
PRICE PER m3 /n	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
BENEFITS FROM FUELWOOD	1509120.00	91440.00	48240.00	-	-	-	-	-	-
POLES (000 poles)									
CLASS ONE									
PERI-URBAN	392.00	392.00	392.00	392.00	392.00	392.00	392.00	392.00	392.00
PRIVATE PLANT.	436.00	436.00	436.00	436.00	436.00	436.00	436.00	436.00	436.00
SOCIAL FORESTRY	1265.60	-	-	-	-	-	-	-	-
TOTAL CLASS ONE	2093.60	828.00	828.00	828.00	828.00	828.00	828.00	828.00	828.00
PRICE PER POLE /o	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
REVENUES FROM CLASS ONE POLES	753696.00	298080.00	298080.00	298080.00	298080.00	298080.00	298080.00	298080.00	298080.00
CLASS TWO									
PERI-URBAN	313.00	313.00	313.00	313.00	313.00	313.00	313.00	313.00	313.00
PRIVATE PLANT.	379.00	379.00	379.00	379.00	379.00	379.00	379.00	379.00	379.00
SOCIAL FORESTRY	1265.60	-	-	-	-	-	-	-	-
TOTAL CLASS TWO	1957.60	692.00	692.00	692.00	692.00	692.00	692.00	692.00	692.00
PRICE PER POLE	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
REVENUES FROM CLASS TWO POLES	861384.00	304480.00	304480.00	304480.00	304480.00	304480.00	304480.00	304480.00	304480.00
CLASS THREE									
PERI-URBAN	-	-	-	-	-	-	-	-	-
PRIVATE PLANT.	-	-	-	-	-	-	-	-	-
TOTAL CLASS THREE	-	-	-	-	-	-	-	-	-
PRICE PER POLE	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
BENEFITS FROM CLASS THREE POLES	-	-	-	-	-	-	-	-	-
TOTAL INCREMENTAL BENEFITS	32179420.00	33560370.00	38709870.00	65362640.00	137297440.00	194880680.00	252660980.00	253076970.00	253671670.01

/a June 1986 prices.
/b 5 m3 increment.
/c 10 m3 per ha., 25% incremental.
/d 7 m3 increment.
/e Assumes 30% of offtake will have a 20% increase in recovery rate due to improved sawmilling capability.
/f Assumes class 2 hardwood export parity price.
/g 12 of potential growth of standing volume.
/h Assumes 50% of offtake will have a 20% increase in recovery rate due to improvedsawmilling capability.
/i Conifer thinnings 12 m3/ton.
/j Coppice recovery 5 m3 increment re: 9 m3/ton.
/k 10 tons per ha.
/l 3 m3 increment: 9 m3/ton.
/m Based on current government results for fuelwood.
/n Based on current government results for fuelwood.
/o Pole price based on current government results for poles.

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UGANDA

FORESTRY DEVELOPMENT PROJECT

COST/BENEFIT ANALYSIS SUMMARY

U.Sh. MILLIONS

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
BENEFITS																					
TOTAL INCREMENTAL BENEFITS	-	7318	10134	14530	18105	21472	19340	18431	18859	20135	22085	19814	20885	21988	20580	21501	23906	22002	24843	26795	26356
COSTS																					
PROJECT COSTS	4139	32724	22275	18319	19388	17670	22261	-	-	-	-	-	-	-	-	-	-	-	-	-	-
REPLACEMENT COSTS	-	-	-	-	-	-	-	851	12620	2212	1104	1685	1386	2242	2085	1247	10303	1505	2711	1895	2037
RECURRENT COSTS																					
AFTER PROJECT PERIOD	-	-	-	-	-	-	-	6324	6324	6324	6324	6324	6324	6324	6324	6324	6324	6324	6324	6324	6324
TOTAL INCREMENTAL COSTS	4139	32724	22275	18319	19388	17670	22261	7175	18944	8535	7428	7988	7709	8565	8408	7571	16627	7829	9035	8219	8361
NET INCREMENTAL BENEFITS	-4139	-25405	-12141	-3789	-1284	3802	-2919	9256	-109	11599	14658	12205	13175	13423	12151	13929	7281	14173	15808	18735	17994

UGANDA

FORESTRY DEVELOPMENT PROJECT

COST/BENEFIT ANALYSIS SUMMARY

U.Sh. MILLIONS

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
BENEFITS															
TOTAL INCREMENTAL BENEFITS	22732	26344	26422	29333	32502	34184	27818	22179	33580	38790	65383	137297	194881	252661	253079
COSTS															
PROJECT COSTS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
REPLACEMENT COSTS	801	751	2784	11418	1497	1078	810	3139	2096	1285	6396	17497	7488	5946	4830
RECURRENT COSTS															
AFTER PROJECT PERIOD	6324	6324	6324	6324	6324	6324	6324	6324	6324	6324	6324	6324	6324	6324	6324
TOTAL INCREMENTAL COSTS	7125	7075	9108	17742	7821	7402	7134	9463	8420	7608	12720	23821	13822	12270	11154
NET INCREMENTAL BENEFITS	15606	19269	17314	11591	24681	26781	20682	22716	25161	31181	52643	113477	181059	240391	241925

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Internal Rates of Return of Net Streams

M. TOT	15.27%

SWITCHING VALUES AT 10%

STREAM	APPRAISAL VALUE	SWITCHING VALUE	PERCENTAGE CHANGE
B. TOT	1.94270E+08	1.41360E+08	-27.24%
C. TOT	1.41360E+08	1.94270E+08	37.43%

Net Present Value at OCC 10% = 52,910,026.6
Internal Rate of Return = 15.3%
Coupon Equivalent Rate of Return = 14.1%

PRESENT VALUES OF NET STR. MS AT A DISCOUNT RATE OF 10%

	B. TOT	UP 10%	UP 20%	UP 50%	DOWN 10%	DOWN 20%	DOWN 50%	LAG 1 YEAR	LAG 2 YEARS	LAG 3 YEARS
C. TOT	52,910,026.672	337,051,091,784,079.4	1.50045E+0833,483,002,214,055,977.9				-4.4225E+0735,249,095,419,193,703.3		4,597,892.4	
UP 10%	38,774,004,950,201,029,377,828,053.7	1.35909E+0819,348,989.5			-80,043.9	-5.8361E+0721,113,073.6		5,057,681.6	-9,538,129.4	
UP 20%	24,637,983,244,065,007,683,497,031.9	1.21773E+085,210,958.8			-1.4216E+07	-7.2497E+07	6,977,051.9	-9,078,340.1	-2.3674E+07	
UP 50%	-1.7770E+07	1,656,942,421,083,988,879,365,039.9	-3.7157E+07	-5.8624E+07	-1.1490E+08	-3.5431E+07	-5.1485E+07	-8.6052E+07		
DOWN 10%	67,046,048,388,473,072.7	1.03900E+081.64181E+0847,819,024,028,191,999.6				-3.0089E+0749,385,117,133,329,725,018,733,914.1				
DOWN 20%	81,182,070,0	1.00609E+081.20035E+081.78317E+0861,755,045,742,328,021.3				-1.5953E+0763,521,138,647,465,748,732,869,935.8				
DOWN 50%	1.23590E+08	1.43017E+081.62444E+082.20725E+081.04163E+0884,736,088,428,455,013.3				1.05929E+0889,873,811,975,278,000.9				
LAG 1 YEAR	-	-	-	-	-	-	-	-48,100,024,232,044,632,117,448,821.2		
LAG 2 YEARS	-	-	-	-	-	-	-	-	-43,727,294,729,131,483.8	
LAG 3 YEARS	-	-	-	-	-	-	-	-	-	-39,752,088.1

INTERNAL RATES OF RETURN OF NET STREAMS

	B. TOT	UP 10%	UP 20%	UP 50%	DOWN 10%	DOWN 20%	DOWN 50%	LAG 1 YEAR	LAG 2 YEARS	LAG 3 YEARS
C. TOT	15.272	17.460	19.852	28.478	13.247	11.338	5.724	12.958	11.437	10.317
UP 10%	13.425	15.272	17.254	24.276	11.679	9.993	4.789	11.610	10.348	9.392
UP 20%	11.984	13.575	15.272	21.134	10.411	8.882	3.985	10.489	9.420	8.590
UP 50%	9.882	10.104	11.338	15.272	7.649	6.381	1.922	7.974	7.263	6.685
DOWN 10%	17.715	20.414	23.406	34.234	15.272	13.030	6.810	14.634	12.744	11.405
DOWN 20%	21.134	24.608	28.478	42.339	18.038	15.272	8.114	16.791	14.359	12.718
DOWN 50%	47.661	56.880	68.988	102.710	39.309	31.851	15.272	29.818	23.054	19.303
LAG 1 YEAR	-	-	-	-	-	-	-	15.272	12.958	11.437
LAG 2 YEARS	-	-	-	-	-	-	-	-	15.272	12.958
LAG 3 YEARS	-	-	-	-	-	-	-	-	-	15.272

Annex 5
Table 1

UGANDA

FORESTRY REHABILITATION PROJECT

INCREMENTAL GOVERNMENT REVENUES FROM PROJECT

000 U. SH.

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
HARDWOOD (000 m3 roundwood) /a										
REFINING /b	15.00	20.00	25.00	28.00	28.00	29.00	29.00	30.00	30.00	31.00
IMPROVED UTILIZATION /c	7.90	10.00	10.80	11.50	12.80	13.20	13.80	13.80	14.10	14.10
INCREMENTAL HARDWOOD PRODUCTION	22.90	30.00	35.80	37.50	40.60	42.20	42.80	43.80	44.10	45.10
ROYALTY PER m3 /d	112.05	150.19	195.30	223.27	293.93	287.78	324.91	324.91	324.91	324.91
REVENUES FROM INCREMENTAL HARDWOOD	256808.24	1441682.00	3128708.00	5023620.00	6185783.52	7288690.88	8343740.18	8538687.38	8597171.52	8792118.72
ESTIMATED TOTAL HARDWOOD OFFTAKE	79.00	100.00	108.00	115.00	128.00	132.00	138.00	138.00	141.00	141.00
REVENUES FROM INCREASED ROYALTY COLLECTION /e	628834.18	3363948.00	6187104.00	10382148.00	13011475.68	15905801.92	18558973.44	18364026.24	18890383.68	18695436.48
TOTAL REVENUES FROM HARDWOOD	885242.40	4805630.00	9315810.00	15405768.00	19197259.20	22792492.80	26902713.60	26902713.60	27487555.20	27487555.20
SOFTWOOD (000 m3 roundwood)										
THINNING	8.50	14.50	35.50	56.50	61.00	30.00	-	-	-	-
SAVINGS - WINDFALL										
PROTECTION /f	-	-	-	0.40	0.50	0.60	0.70	0.80	1.30	1.40
IMPROVED UTILIZATION /g	3.20	4.10	8.50	13.20	18.50	22.10	24.70	25.60	26.50	27.60
INCREMENTAL SOFTWOOD PRODUCTION	9.70	18.60	44.00	70.10	80.00	52.70	25.40	26.40	27.80	29.00
ROYALTY PER m3 (cypress)	104.05	148.15	181.35	207.32	235.78	267.23	301.70	301.70	301.70	301.70
ROYALTY PER m3 (other pine)	44.02	62.93	78.73	87.71	99.78	113.08	127.64	127.64	127.64	127.64
REVENUES FROM INCREMENTAL SOFTWOOD	61916.94	509174.72	2202774.75	5249413.72	6943228.40	6012321.68	3271631.78	3400436.16	3580782.32	3735327.60
ESTIMATED TOTAL SOFTWOOD OFFTAKE	32.00	41.00	85.00	132.00	185.00	221.00	247.00	256.00	265.00	276.00
REVENUES FROM INCREASED ROYALTY COLLECTION /h	142345.14	613199.68	2052585.96	4723682.04	9112984.65	19200660.14	28543055.04	29973490.24	30552403.68	31814688.80
TOTAL REVENUES FROM SOFTWOOD	204262.08	1122374.39	4255360.31	10073075.78	16056211.05	25212981.80	31814688.80	32973926.40	34133188.00	35550014.40
CHARCOAL (000 tons)										
CONIFERS /i	1.00	2.00	4.00	6.00	8.00	6.00	-	-	-	-
ENCROACHMENTS /j	-	-	-	-	-	-	1.00	6.00	9.00	12.00
REFINING /k	15.00	20.00	25.00	26.00	28.00	29.00	29.00	30.00	30.00	31.00
INCREMENTAL CHARCOAL PRODUCTION	16.00	22.00	29.00	32.00	36.00	35.00	30.00	36.00	39.00	43.00
LICENSE FEE PER TON /l	24.01	34.33	41.85	47.84	54.41	61.87	69.62	69.62	69.62	69.62
REVENUES FROM INCREMENTAL CHARCOAL	38419.20	226551.60	948142.50	918804.80	1175342.40	1295028.00	1253232.00	1503878.40	1629201.60	1796299.20
ESTIMATED TOTAL CHARCOAL PRODUCTION	113.20	126.50	139.80	153.10	166.00	170.50	175.00	179.50	184.00	188.00
REVENUES FROM INCREASED LICENCE COLLECTION /m	233398.64	1078120.10	2686641.00	3478345.04	4244292.00	5013568.40	6057288.00	5994626.40	6057288.00	6057288.00
TOTAL REVENUES FROM CHARCOAL	271815.84	1302671.70	2632783.50	4394949.84	5419634.40	6308536.40	7310520.00	7498504.80	7686489.60	7853587.20
FUELWOOD (000 m3 stacked)										
PERI-URBAN PLANT.	13.40	20.00	20.00	20.00	29.20	32.10	8.80	8.80	10.20	26.80
TOTAL FUELWOOD PRODUCTION	13.40	20.00	20.00	20.00	29.20	32.10	8.80	8.80	10.20	26.80
ROYALTY PER m3	4.86	6.87	8.37	9.57	10.88	12.32	13.92	13.92	13.92	13.92
REVENUES FROM FUELWOOD	64352.18	137304.00	167400.00	191378.00	317777.76	395908.56	122538.24	122538.24	142032.96	373184.64
POLES (000 poles)										
CLASS ONE										
PERI-URBAN	20.00	30.00	30.00	30.00	224.00	322.00	287.00	287.00	334.00	871.00
TOTAL CLASS ONE PRODUCTION	20.00	30.00	30.00	30.00	224.00	322.00	287.00	287.00	334.00	871.00
ROYALTY PER POLE	0.48	0.69	0.84	0.95	1.09	1.23	1.39	1.39	1.39	1.39
REVENUES FROM CLASS ONE POLES	9604.80	20595.60	25110.00	28708.40	243774.72	397141.92	399841.76	399841.76	465088.32	1212850.08
CLASS TWO										
PERI-URBAN	12.00	18.00	18.00	18.00	174.00	251.00	230.00	230.00	268.00	698.00
TOTAL CLASS TWO PRODUCTION	12.00	18.00	18.00	18.00	174.00	251.00	230.00	230.00	268.00	698.00
ROYALTY PER POLE	0.59	0.84	1.02	1.17	1.33	1.51	1.70	1.70	1.70	1.70
REVENUES FROM CLASS TWO POLES	7043.52	15103.44	18414.00	21051.36	231440.88	378387.44	391441.60	391441.60	458114.56	1187940.16
CLASS THREE										
PERI-URBAN	8.00	12.00	12.00	12.00	16.00	16.00	-	-	-	-
TOTAL CLASS THREE PRODUCTION	8.00	12.00	12.00	12.00	16.00	16.00	-	-	-	-
ROYALTY PER POLE	0.99	1.41	1.72	1.97	2.24	2.94	2.88	2.88	2.88	2.88
REVENUES FROM CLASS THREE POLES	7897.28	16934.16	20648.00	23803.04	31318.28	35493.36	-	-	-	-
TOTAL INCREMENTAL REVENUES	1450218.08	7420823.29	18435523.81	30138530.40	41497416.28	55521002.28	68941542.00	68288768.40	70370446.64	73665131.68

/a Current to 1993, constant thereafter.
/b 10 m3 per ha , 25% incremental.
/c Assumes 50% of offtake will have a 20% increase in recovery rate due to improved sawmilling capability
/d Assumes class 3 hardwood.
/e Assumes FD will increase royalty collection to 10% in year 1, 30% in year 2, and 45% in year 3, and 60% from year 4 onwards.
/f 1% of potential growth of standing volume.
/g Assumes 90% of offtake will have a 90% increase in recovery rate due to improvedsawmilling capability
/h Assumes FD will increase royalty collection to 10% in year 1, 35% in year 2, and 45% in year 3, and 60% from year 4 onwards
/i Conifer thinnings 12 m3/ton.
/j Cassia coppice 5 m3 increment pa. 9 m3/ton
/k 10 tons/ha.
/l Assumes a charcoal burner burns a ton of charcoal a month.
/m Assumes FD will increase collection rate to 10% of charcoal burners in year 1, 30% in year 2, 45% in year 3, and 60% from year 4 onwards.

May 20, 1987 13:08

Annex 5
Table 2

UGANDA

FORESTRY REHABILITATION PROJECT

INCREMENTAL GOVERNMENTAL CASH FLOW

U.SH. MILLION

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
INFLOWS /a										
EXTERNAL FINANCING										
IDA CREDIT /b	5842	28572	16712	13159	12101	11448	25792	-	-	-
DANIDA GRANT	1138	7481	9529	9787	12832	14224	18210	-	-	-
EEC GRANT	-	11009	9244	10409	12718	10745	11983	-	-	-
CARE GRANT	-	224	175	358	231	434	280	-	-	-
UNDP	548	1692	5468	4105	2853	3431	-	-	-	-
TOTAL	7528	48982	41128	37798	40735	40282	56265	-	-	-
ROYALTIES, LICENSES, AND TAXES /c										
ROYALTIES FROM HARDWOOD FORESTS	-	885	4806	9318	15406	19197	22792	26903	26903	27488
ROYALTIES FROM SOFTWOOD FORESTS	-	204	1122	4255	10073	16056	25213	31815	32974	34133
CHARCOAL LICENSE COLLECTION	-	272	1303	2633	4385	5420	6309	7311	7499	7686
PERI-URBAN PLANTATIONS	-	89	190	232	265	824	1207	814	814	1063
TAXES FROM FUEL EXPENDITURES	19	161	242	310	385	448	534	534	534	534
TOTAL	19	1611	7663	16745	30524	41945	56055	67476	68823	70904
TOTAL INFLOWS	7547	50593	48791	54543	71258	82227	112320	67476	68823	70904
OUTFLOWS										
INVESTMENT COSTS	6850	44453	34045	29887	31516	30253	47744	-	-	-
RECURRENT COSTS /d	718	6269	10197	13174	15716	18187	20754	20311	29399	21821
DEBT SERVICE, IDA CREDIT /e	-	436	436	436	436	436	436	436	436	436
TOTAL OUTFLOWS	7568	51158	44678	43497	47668	48876	68934	20747	29835	22257
NET ANNUAL INFLOW (OUTFLOW)	-21	-565	4113	11046	23590	33351	43386	46729	38988	48647
CUMULATIVE INFLOW (OUTFLOW)	-21	-587	3526	14572	38162	71513	114898	161627	200615	249262

/a Current to 1993, constant thereafter.
/b Assumes anticipated financing of inventory and wood industries training.
/c Assumes a collection rate of 10% in year 1, 30% in year 2, 45% in year 3, and 60% in year 4 onwards.
/d Includes replacement costs after project period.
/e Interest at .75% per year for 50 years, with a 10 year grace period on principal.

May 20, 1987 13:08

Annex 5
Table 3
Page 1

One Hectare Model For Private Peri-urban Woodlot (Financial)

Labor	Unit: mandays	YEAR 1	2	3-4	5	6	7-8	9	10	11-12	13	14	15-16	17	18	19-20	21	22	25
Land clearing a/		75																	
Cutting and stacking b/		16																	
Burning		12																	
Land preparation		40																	
Planting crops		12																	
Digging pits		25																	
Carrying seedlings		4																	
Planting trees c/		10																	
Harvesting crops		45																	
Weeding/cultivation 1st year		80																	
Protection/maintenance			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Weeding/slashing 2nd year			10																
Felling d/					24			24			24			24			24		24
Crosscut and trim					54			54			54			54			54		54
Carry and stack					42			42			42			42			42		42
Post harvest maintenance						3			3			3			3			3	
Coppice cutting						4			4			4			4			4	
Sub-total (mandays)		319	11	1	121	8	1	121	8	1	121	8	1	121	8	1	121	8	1	121
Cost of labor @ U Sh 1500 (U Sh '000)		478.5	16.5	1.5	181.5	12	1.5	181.5	12	1.5	181.5	12	1.5	181.5	12	1.5	181.5	12	1.5	180

USh '000

Materials	Unit	No. of Units	Unit Cost																
Seedlings	1000	2.5	16	40															
Tools	var			112.0 e/	23		140 f/	29			29	29		29	29		29	29	29
Total Costs				630.5	39.5	1.5	321.5	29	1.5	210.0	41.0	1.5	210.0	41	1.5	210.0	41	1.5	210.0	41	1.5	210
Benefits																			
Yields:																			
Maize (kg)				1100															
Fuelwood m^3				60			88	15 b/		95	15		95	14		86	12		77	11		70
stacked g/				200			1270			1270			1270			1270			1270			1270
Poles Cl I				120			1020			1020			1020			1020			1020			1020
Value (USh'000) i/																			
Maize (USh 520) j/				572															
Fuelwood (USh 9600/m^3)				576			845	144		912	144		912	134		825	115		739	105		672
Poles Cl I (USh 960 ea)				192			1219			1219			1219			1219			1219			1219
Poles Cl II (USh 1920 ea)				230			1958			1958			1958			1958			1958			1958
Total Benefits				1570			4022	144		4089	144		4089	134		4002	115		3916	105		3949

a/ Includes cutting and burning of old stumps.
b/ Fuelwood for sale is cut and stacked, or residues burnt on site.
c/ Planting at 2 x 2 m (2500/ha).
d/ Fill 90 trees/m/day, cross cut and trim 40 trees/m/day 2120 stems/ha surveying.
e/ 2 axes (USh 22,000 ea), 2 hoes (7,600), 3 pangas (7,200), 1 file (9,600), 1 bowsaw (21,600).
f/ 3 axes (USh 22,000 ea), 1 file (9,600), 3 bowsaws (21,600).
g/ Assuming 24 m^3/ha/year MAI with 2120 stems remaining for cutting. 60% used for poles. Average butt diameter at 4 years is 11 cm; average height 18 m; taper 0.6 cm/m. Each tree yields 1 Class I pole + 1 Class II pole + 0.012 m^3 fuelwood or if total stem fuelwood 0.045 m^3 (solid) or 0.075 m^3 (stacked).
h/ Cutting 75% of stems yielding 50% MAI for one year. MAI increases to 30 m^3/ha/yr first two coppice rotations. Thereafter 10% decrease in MAI each rotation.
i/ Weighed average price Jinja, Kampala and Arua, at roadside 13 miles from urban market.
j/ Based on 1984 prices adjusted for inflation at 133 and 105%.

UGANDA

FORESTRY REHABILITATION PROJECT

ONE HECTARE MODEL

PRIVATE FUELWOOD PLANTING

THOUSANDS U. Sh.

INCREMENTAL GOVERNMENTAL CASH FLOW

U. SH. MILLION

	1988	1989	1990-1991	1992	1993	1994-1995	1996	1997	1998-1999	2000	2001	2002-2003	2004	2005	2006-2007	2008	2009	2010-2011	2012
Costs	631	40	2	322	29	2	210	41	2	210	41	2	210	41	2	210	41	2	210
Benefits	1570	-	-	4022	144	-	4089	144	-	4089	134	-	4002	115	-	3916	105	-	3849
Net stream	940	-40	-2	3701	115	-2	3879	103	-2	3879	93	-2	3792	74	-2	3706	64	-2	3639

March 31, 1987 17:58

Present Value of Streams at 10.00%

R. PROJ 7,618.92

Annex 6
Table 1

UGANDA

FORESTRY REHABILITATION PROJECT

Training Program

TYPE OF TRAINING	UNIT	PROJECT TRAINING 0	1	2	3	4	5	6	TOTAL
1. STUDY TOURS									
Overseas (Indust. Softwood)	mm	-	3	3	3	3	-	-	12
Kenya/Uganda (CARE FF)	mm	-	5	-	5	-	5	-	15
Overseas (Principal of NFC)	mm	-	-	-	3	-	-	-	3
Overseas (Wood Utiliz. Nakawa)	mm	-	-	17	11	-	-	-	28
Overseas (Seed Collec. & Dist.)	mm		-	3	3	-	-	-	6
		-	8	23	25	3	5	-	64
2. FELLOWSHIPS									
Indust. Softwood Plantations	mm	-	-	12	-	-	-	-	12
Farm Forestry (FD Takeover)	mm	-	-	3	-	3	-		6
NFC (Farm Forestry)	mm	-	9	-	-	-	-	-	9
		-	9	15	-	3	-	-	27
3. MAKERERE UNIVERSITY									
Farm Forestry (FD Takeover) a/	mm	-	24	20	20	20	20	-	104
4. NYABYEYA FORESTRY COLLEGE									
Teacher Training b/	mm	-	6	-	-	-	-	-	6
Foresters/Forest Rangers (FF) c/	mm	-	-	44	44	40	40	40	208
DFO/FO (Professional Management) d/	mm	-	-	10	10	10	10	10	50
Foresters (Refresher Courses) e/	mm	-	-	40	40	40	40	40	200
Forest Rangers (Refresher Courses) f/	mm	-	-	60	60	60	60	60	300
Forest Guards (Refresher Courses) g/	mm	-	-	30	30	30	30	30	150
Orientation Courses & Workshop h/	mm	-	-	25	25	25	25	25	125
Enrichment Planting Technique	mm	-	8	8	8	8	8	8	40
SUB-TOTAL		-	14	217	217	213	213	213	1079
5. AGROFORESTRY RES. & DEMON. CENTERS									
Farmer Training (FF) i/	mm	-	-	120	120	120	120	120	600
GRAND TOTAL	mm	-	55	395	382	359	358	333	1842

Notes:
- a/ One, two month course for 12 FO's in year 1 and for 10 FO's/year thereafter by project and 2 FO's/district (52) will have received training.
- b/ One, one month course for 6 NFC teachers in year 1.
- c/ One, two month course for 22 Foresters and Forest Rangers in years 2 and 3 and for 20 F/FR's/year thereafter. By project end 4 F/FR's/district (104) will have received training.
- d/ One, two week course/annum for 20 DFO/FO's.
- e/ One, two month course/annum for 20 Foresters.
- f/ One, two month course/annum for 30 Forest Rangers.
- g/ Two, two week courses/annum for 30 Forest Guards at a time.
- h/ Ten, one week workshops/annum for 10 persons at a time.
- i/ Eight, one week courses for 20 farmers at a time at the 3 ARDC's.

Note: Sawmill trainees are not included: numbers are not known at this time.

UGANDA

FORESTRY REHABILITATION PROJECT

Summary of Physical Targets

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Total
Energy Farming							
Seedlings produced ('000)	300	550	750	1050	1425	1575	5700
FD Plantings (ha)	100	150	150	150	175	175	900
Private planting (ha)	-	50	100	200	300	350	1000
Road rehab. (km)	3	5	7	9	12	14	50
Road maintenance (km)	-	0	7	11	15	19	55
Farm Forestry							
Districts involved							
NGO "Spearheading" Operations	6	5	5	5	5	5	5
FD Takeover Operations	5	11	11	16	16	21	21
Total	11	16	16	21	21	26	26
Accumulative Nursery Establishment and Seedling Production							
NGO Spearheading Operation							
Nurseries (no.)	100	200	300	400	500	600	600
Seedlings (million)	1.0	3.2	6.0	9.0	12.0	15.0	46.2
FD Takeover Operation							
Nurseries (no.)	220	220	220	220	220	220	220
Seedlings (million)	6.6	6.6	6.6	6.6	6.6	6.6	39.6
FD New Nursery Establishment							
Nurseries (no.)	55	110	135	160	185	210	210
Seedlings (million)	0.6	1.8	3.0	4.0	4.8	5.4	19.6
Totals							
Nurseries (no.)	375	530	655	780	905	1030	1030
Seedlings (million)	8.2	11.6	15.6	19.6	23.4	27.0	105.4

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Table 2
Page 2

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Total
Rehabilitation of Industrial Plantations							
Pruning 2m (ha)	150	160					310
Pruning 5m (ha)	750	1000					1750
Thinning 1st (ha)	300	500	1000	900			2700
Thinning 2nd (ha)	100	300	700	1100	1400	800	4400
Thinning 3rd (ha)	100	200	500	800	800	300	2700
Final felling (ha)	100	100	200	300	500	800	2000
Sawmill input capacity required (m^3)	30,500	38,500	83,500	128,500	181,000	209,000	671,000
Plantation estimate							
New (ha)	-	-	150	200	200	200	750
Reforest (ha)	-	200	200	300	500	800	2000
Total (ha)		200	350	500	700	1000	2750
Road rehab. (km)	15	27	53	37	35	43	210
New roads (km)		6	6	6	6	6	30
Natural Forest Management Rehabilitation							
Planting Program and Plant Requirements							
Encroachment							
Area (ha)	300	2000	3000	4000	4000	4000	17,300
Plants ('000)	40	300	400	600	600	600	2,540
Enrichment							
Area (ha)	200	1000	1500	2000	2000	2000	8,700
Plants ('000)	30	140	200	300	300	300	1,270
Demarcation Natural Forest							
Boundary (km)		150	450	750			1,350
Plants ('000)		15	45	75	5	5	145
Demarcation Savannah							
Hectare ('000)		200	150	130	100	52	632
Plants ('000)		92	69	59	46	24	290
Total Plants ('000)	70	647	714	1034	951	929	4,275

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Total
Refinement and Charcoal Production							
Area refined (ha)	1500	1975	2500	2625	2825	2825	14,250
Charcoal ('000 ton)	15	20	25	26	28	29	143
Total	1515	1995	2525	2651	2853	2854	14,393

Annex 6
Table 3

UGANDA

FORESTRY REHABILITATION PROJECT

Project Activities Draft Staffing Plan

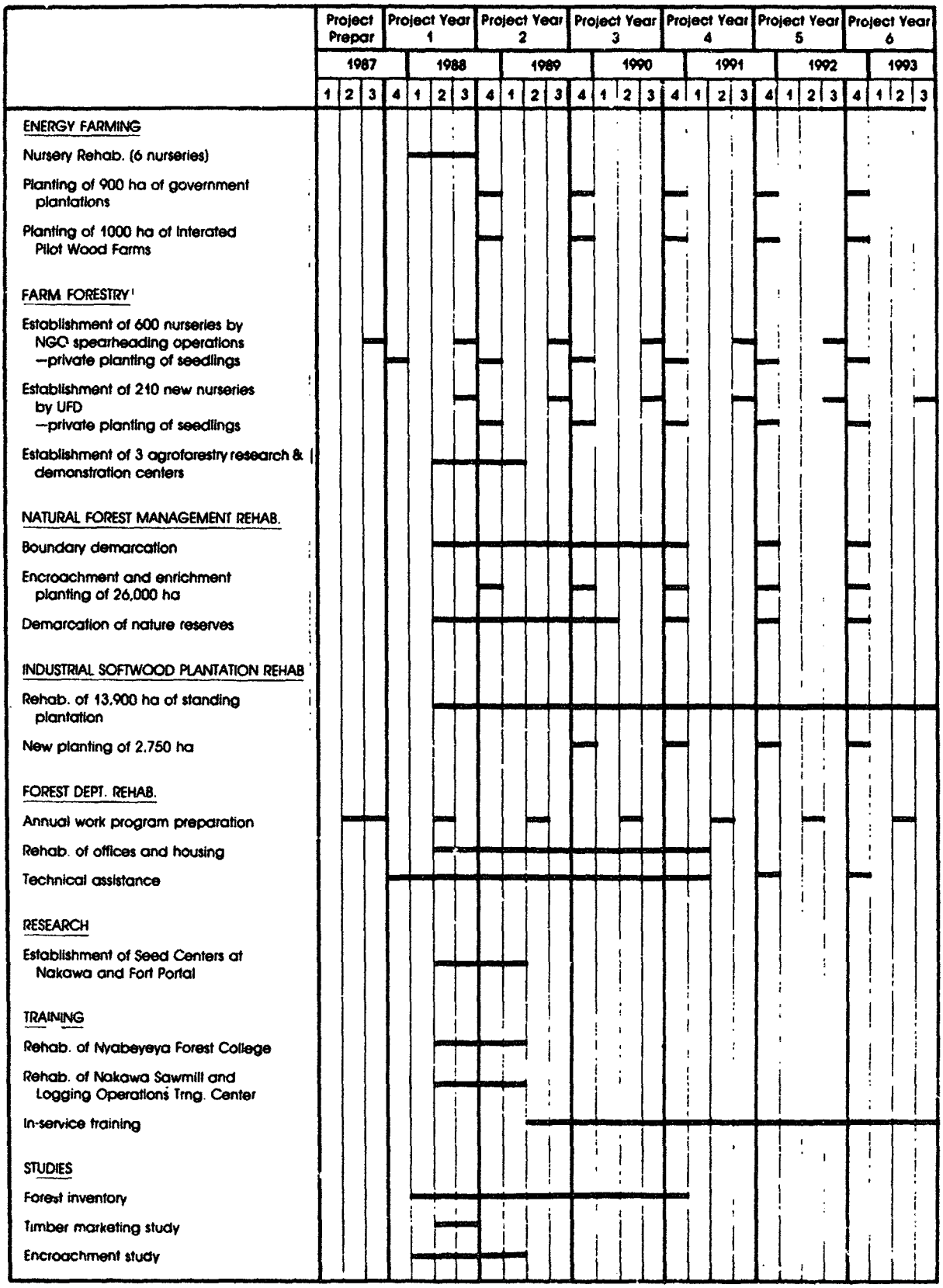
Staffing Requirements at Full Development

Field Operations	Forest Officers	Foresters	Rangers	Guards
Peri-urban Woodlots		6	6	12
Industrial Plantations	6	25	55	74
Research/Seed Centers	9	4	7	8
Sawmill Training	7	5	1	-
Inventory	7	2	15	30
Boundary Demarcation/THF		1	2	14
Savannah		3	4	18
Encroachment Planting		3	5	12
Enrichment Planting		7	10	20
Revenue Collection		12	20	144*
Natural Forest Conservation	3			12
Charcoal Extension		1	1	4
Nurseries		1	3	8
Farm Forestry	26	66	90	112+
Total	58	130	209	446
Supervision and NFC				
District Forest Officers	33			
Regional Forest Officers	10			
Headquarters Support	15	10		*
Nyabyeya Forest College	8	4		4
Grand Total	124	134	209	450
Establishment:	160	215	307	600

* Staffing requirements for revenue collection and at HQ have not yet been worked out in detail. The staffing plan does not include certain activities not covered by the project e.g. wood quality testing for export. The table will be reviewed as part of the initial AWP.

+ At full development i.e. in 26 districts.

UGANDA
FOREST REHABILITATION PROJECT
Implementation Schedule



World Bank—30824

Table 1

Summary of Technical Assistance Provisions

Expertise	Total Manmonths
Natural Forest Management	
Forestry Management Specialist	42
Inventory Specialist	16
Computer Programmer	4
Charcoal and Forest Management Specialist	6
Natural Conservation Specialist	72
	140
Plantation Management	
Plantation Management Specialist	12
Social Forestry#	
Project Manager	72
Assistant Manager	72
Sociologist	72
Environmental Monitor	72
Agroforestry Training Officer	72
Volunteers (3)	216
	576
Training //	
Forestry Training //	41
Sawmill Design Engineer/Operations Trainer	14
Saw Doctor	6
Logging Operations Trainer	6
	67
Planning and Management	
Project Coordinator	51
Financial Controller	45
Senior Forest Planner	45
Procurement Manager	42
Monitoring and Evaluation Specialist	8
Building Supervisor	10
Auditing of Accounts	10
	211
Research	
Silvicultural Specialist	6
Studies	
Timber Marketing Study: Pulp and Paper Marketing Analyst	3
Mechanical Woodproducts Analyst	4
Encroachment Study: Forest Economist	3
Sociologist	3
Milling and Logging Equipment Inventory:	
Sawmill Operations Specialist	2
	15
Total	1,027
Of which CARE grant	576

To be provided by CARE on a grant basis.
// 33 months of forest trainer training and all sawmill and logging may be financed by UNDP.

Terms of Reference for Principal Technical Assistants

A. PROJECT COORDINATOR (PC)

Location: Kampala

Starting Date: Last 9 months of year 0. (April 1, 1987)

Duration: 61 months

Duties: The Project Coordinator would have executive authority with a rank comparable to that of a Deputy Chief Forest Officer and be responsible directly to the CFO for the management and implementation of the project. He would be assisted by a Project Implementation Team (PIT) which would answer directly to him and be responsible for the four technical divisions (see FD Organization Chart, Annex 8). He would also be responsible for training a suitable counterpart to take over from him in year 4 of the project. In the 9 months prior to project start-up, he would assist the FD to prepare, plan and make adequate arrangements for the rapid mobilization of project resources following loan effectiveness. The PC would thereafter be fully responsible for the ongoing coordination and implementation of project activities over a further period of 48 months. The PC's duties during the preproject period would be as follows:

(a) Assist FD to compile, review and update the relevant standing orders, technical orders and notes appropriate to proper project execution;

(b) Run workshops for the professional staff from Head Office and the Regions at which project issues, constraints and solutions would be identified, clear objectives and target dates set for the initiation of various project activities and how these would be integrated between each of the components;

(c) Assist the CFO to identify most appropriate forest officers from within the FD to undertake specific

(d) Allocate the responsibilities for various components of the project; improve quality and regularity of management information between districts and regions, regions and FD Headquarters;

(e) Arrange, with the assistance of the Procurement Manager, for procurement under preproject financing to be undertaken and the procedures to be completed

for the release of tender documents under World Bank/ EEC regulations for international competitive bidding on project equipment, vehicles, and materials once loan negotiations are completed;

(f) Strengthen the links between the FD and appropriate personnel of other departments and organizations involved with project implementation; and

(g) Ensure consultants provided under technical assistance are utilized effectively.

Qualifications: The candidate would be an experienced specialist in forestry administration and management. He would have a degree in forestry with at least 15 years experience of tropical forestry in developing countries. His service would include at least 5 years in a senior forestry administrative position, preferably in Africa. The ability to speak and write English clearly is essential.

B. SENIOR PLANNING OFFICER (SPO)

Location: Kampala

Starting Date: Last 9 months of year 0. (April 1, 1987)

Duration: 61 months

Duties: The Senior Planning Officer would be a member of PIT and answer to the Project Coordinator. Under the general direction of the PC, he would:

(a) Assist the Forest Planning Division prepare the annual work plan and other quarterly and annual reports connected with the project;

(b) Assist the Administration Division and NFC in preparing the detailed training program (covering study tours, fellowships, in-service training and farmer training) needed for project implementation, including the preparation of appropriate curriculum for in-service training and refresher courses at NFC and Nakawa;

(c) Assist those responsible for detailed planning of the farm forestry, energy farming, natural forest management rehabilitation, softwood plantation rehabilitation and FD rehabilitation components to finalize their plans and, in so doing, ensure there is

adequate coordination and deployment to staff to achieve effective implementation.

(d) Carry out other duties concerned with planning that may be passed to him by the PC.

Qualifications: The candidate must have a graduate degree (MSc equivalent) in forestry and have had at least 15 years professional experience, some of which in managerial/planning positions and at least 5 years in developing countries. He should be familiar with the basic concept of economic analysis, project planning and forestry administration. Fluency in English is essential.

C. FINANCIAL CONTROLLER

Location: Kampala

Starting Date: Last 9 months of year 0. (April ', 1987)

Duration: 61 months

Duties: The Financial Controller would be a member of PIT and answer to the Project Coordinator. Under the general direction of the PC, he would:

(a) Be responsible for managing all financial operations of PIT including the design and implementation of accounting systems;

(b) Provide training for FD/HQ accountancy staff in meeting the financial reporting and auditing arrangements required for projects financed by IDA;

(c) Ensure the timely preparation of monthly and annual accounts and the detailed budget;

(d) Assist the Finance Division of FD in all financial matters connected with the project, including management of special accounts.

(e) Ensure that funding is available and the flow of funds is smooth for the project operations;

(f) Ensure the proper recording and maintenance of all inventories and fixed assets;

(g) Develop and conduct in-house training programs for staff in the accounting units; and

(h) Prepare quarterly and annual written reports on the progress of the financial work of the project.

Qualifications: The Financial Controller must have professional qualifications in accounting and/or equivalent university degree, at least five years experience as a Chief Accountant or Controller, and experience in developing countries and in projects financed by the World Bank or other international organizations.

D. PROCUREMENT MANAGER

Location: Kampala

Starting Date: Last 9 months of year 0. (April 1, 1987)

Duration: 41 months

Duties: The Procurement Manager would be a member of the Project Implementation Team and answer to the Project Coordinator. Under the general direction of the PC, he would:

(a) Be responsible for all project procurement matters including schedule of requirements and implementation program, recruitment of consultancy services, preparation of specifications, identification of potential suppliers, preparation of bid documents and publication of invitations to bid, preparing bid evaluation reports, preparation of contract documents, contract administration, monitoring of delivery of goods, etc.

(b) Be responsible for setting up a proper warehouse management and inventory system;

(c) Design and develop procedures and systems for controlling and recording procurement action;

(d) Prepare monthly and quarterly statements of procurement accounts;

(e) Prepare quarterly reports on procurement achievements; and

(f) Run in-service training sessions on procurement and related matters.

(g) Under PPF, he would prepare procedures and bid documentation for all items to be procured in the first year of the project. He would also handle procurement of items purchased under PPF.

Qualifications: The candidate should have an appropriate qualification, probably in accounting or in engineering, and have at least 10 years experience of procurement in developing

countries. It would be an advantage if the candidate has had experience with procurement on IDA funded projects.

E. BUILDINGS SUPERVISOR

Location: Kampala

Starting Date: Three months of PPF

Duration: 10 months (two months at a time for 4 years)

Duties: The Buildings Supervisor would be a member of PIT and answer to the Project Coordinator. Under the PC's guidance, he would have responsibility for the following:

(a) Studying buildings design for all grades of housing to be constructed for FD staff, revising as necessary and seeking approval from the Ministry of Housing and Urban Development;

(b) Preparing Bills of Quantity for each type of building;

(c) Preparing LCB bid documents for all new housing/office requirements;

(d) Preparing LCB documents for imported goods used in building program;

(e) Giving guidance on the evaluation of tenders and award of contracts;

(f) Studying building rehabilitation requirements, including those at Nyabyeya Forestry College, and preparing carefully documented specifications and instructions for all rehabilitation within each Forest Station;

(g) Arranging the supplies program for all building materials for each Forest Station; and

(h) Giving guidance on the preparation and approval of payment certificates.

(i) Under PPF, he would prepare designs and bid documents to be constructed in the first year of the project.

Qualifications: The candidate should have an architectural or quantity surveyor's background with practical low cost building experience. The candidate need not be a professional but should have had some technical training in building. The candidate will be expected to work with technical staff in the Ministry of Health and UFD.

F. MONITORING AND EVALUATION SPECIALIST

Location: Kampala

Starting Date: Year 1 (January 1, 1988)

Duration: 8 months (one month/year in years 1, 2, 4, 5 and 6 and 3 months in year 3).

Duties: The M&E Specialist would report to the Project Coordinator and be a member of PIT but would work in close association with the M&E Unit in the MAF. He would help the head of the MAF's M&E Unit establish a M&E program for the forestry project. Specifically he would:

(a) Advise on the parameters to be used to measure progress;

(b) Design necessary sociological, economic and marketing surveys;

(c) Train M&E staff in appropriate technologies;

(d) Provide guidance on the analysis of data collected;

(e) Provide guidance on the preparation of progress and other reports; and

(f) Introduce modern computerized technology for project monitoring.

Qualifications: The candidate must have a graduate degree in economics (with statistics and sociology) and at least 5 years working experience in developing countries in the conduct of agro-economic surveys and supervision and control of field enumerators.

G. CARE'S PROJECT MANAGER (Expatriate)

Location: Kampala

Starting Date: January 1, 1988

Duration: 72 months

Objective: Overall responsibility for all CARE's spearheading field operations, procurement and budget management in order to attain project targets.

Duties: (i) Close liaison with Forest Department headquarters (particularly with the Project Coordinator DCFO (Technical) and Head of Farm Forestry Extension Service), Regional and District personnel and other related Government Departments, agencies and organizations.

(ii) Supervision of Project Assistant, Environmental Monitor, Training Officer, Sociologist and other support staff.

(iii) Ensure training of Forest Department personnel is carried out to appropriate levels.

(iv) Establish and maintain all required records on field activities, training, financial, equipment inventory and personnel.

(v) Carry out advisory visits in areas handed over to Forest Department to check on continued progress.

(vi) Prepare and submit reports as required by CARE, IBRD and GOU.

Qualifications: The candidate would be an experienced specialist in farm an agroforestry. He would have a degree in forestry with at least 10 years experience in tropical forest in developing countries. His service would ideally include at least 5 years work in Africa. The ability to speak and write English clearly is essential.

H. ASSISTANT PROJECT MANAGER (Expatriate)

Location: Project Area

Starting Date: July 1, 1987

Duration: 72 months

Objective: To provide technical assistance and coordinate field-based activities.

Duties: (i) In cooperation with the Project Manager liaise with Forest Department staff at all levels as well as other Government agencies and organizations.

(ii) Cooperate with Training Officer to ensure training program is carried out efficiently.

(iii) Ensure adequate information is collected in the field to maintain appropriate records.

(iv) Work with the two counterpart Forest Department area foresters to ensure smooth operations in their areas of responsibility.

(v) Responsible, through the Forest Department area foresters, for the distribution of materials, financial payments, and supervision of transportation in operating areas.

(vi) Whatever other duties assigned by the Project Manager.

Qualifications: The candidate would be experienced in social and agroforestry. He would have a degree in forestry and at least five years experience as a practicing forester in Uganda. He would need to write and speak English clearly.

I. ENVIRONMENTAL MONITOR (Expatriate)

Location: Kampala and Project Area

Starting Date: October 1, 1987

Duration: 69 months

Objective: Conduct environmental analysis of farm forestry activities and make recommendation to project management concerning environmental aspects of farm forestry.

Duties:

(i) In cooperation with the sociologist, prior to start-up spearhead activities in new districts, the Environmental Monitor (EM) will collect baseline data on the enviromental profile of the districts, socio-economic profile of the districts and farming systems within the districts. Other data will be specified according to general site conditions.

(ii) Conduct ongoing monitoring of project activities (including FD Takeover Operation), updating baseline data and making appropriate recommendations for implementational improvements. Much of the data collection will be conducted by local FD staff as part of their basic studies.

(iii) Train FD staff in appropriate data gathering techniques.

(iv) Provide for annual and mid-term appraisal teams detailed environmental impact analyses of project interventions. The exact format will be determined jointly by the EM, the CARE PM and the PMU of the FRP.

(v) Collaborate with the Forestry Research Division of the ARDCs in the establishment of appropriate on-farm and on-station agroforestry research activities. Tied to this will be preparation of specific studies of the inputs versus outputs of the various agroforestry configurations promoted by the project.

(vi) Provide planning inputs to CARE project management on all aspects of farm forestry implementation. This would include assisting DFOs and RFOs in preparing district level farm forestry plans. Special emphasis will also be placed on cost recovery and privatization of nurseries where appropriate.

Qualifications: The candidate should be experienced in farm forestry and have at least 5 years overseas environmental work experience, conducting environmental impact analysis and farming systems analyses. He/she should have a MS in forestry, agriculture or a related field as well as computer skills and familiarity with Lotus 1-2-3, DBase III, and Q & A.

J. AGROFORESTRY TRAINING OFFICER (Locally recruited by CARE)

Location: Kampala and Project Area

Starting Date: July 1, 1987

Duration: 72 months

Objective: To train Forest Department personnel attached to the project in the skills of Agroforestry Extension.

Duties:

(i) Develop appropriate training materials and methods for all levels of participating Forest Department personnel.

(ii) Arrange and carry out training courses for Forest Department personnel in Uganda possibly including field trips within Uganda or in Kenya to view established Agroforestry interventions.

(iii) Continually follow up on trained personnel to reinforce as necessary.

(iv) With Project Manager arrange to distribute relevant information on Agroforestry to Forest Department personnel as it becomes available.

(v) Liaise with those Government officers responsible for training farmers through the District Farm Institute to ensure that the material being passed on compliments the Forest Department staff training.

(vi) Whatever other duties assigned by the Project Manager.

Qualifications: The candidate would be experienced in farm and agroforestry activities and have demonstrated ability in teaching. He would have a degree in forestry and at least 5 years experience as a practicing forester in Uganda. An ability to speak and write English is essential.

K. SOCIOLOGIST
(Locally recruited by CARE)

Location: Kampala and Project Area

Starting Date: October 1, 1987

Duration: 69 months

Objective: To design methods for and to carry out baseline socio-economic data collection and analysis and continued socio-economic marketing of project impact.

Duties:

(i) In close cooperation with the GM develop appropriate techniques, questionnaires, etc., to enable appropriate social data to be collected both as baseline data and to evaluate project progress over time.

(ii) Collect, or arrange to have collected, relevant baseline data prior to spearhead start-up in new district.

(iii) Analyze collected data and produce reliable reports to the Project Manager.

(iv) Provide socio-economic impact reports for periodic evaluation teams as appropriate.

(v) Whatever other duties assigned by the Project Manager.

Qualifications: Minimum B.Sc. in Social Science with at least 5 years Ugandan sociological experience. Prepared to travel extensively within the project area. Computer skills.

L. TIMBER MARKETING SURVEY

(i) Terms of Reference for Mechanical Wood Products Market Analyst

Location: Kampala, other relevant towns ir Uganda, Nairobi and relevant European and Middle East Markets.

Duration: Four months.

Qualifications: Degree in Economics and Engineering.

Experience: At least 15 years experience in market analysis with at least 5 years experience in mechanical wood products marketing. A thorough knowledge of the current mechanical wood products market in Europe and the Middle East, particularly for tropical hardwoods.

Position: Under the supervision of the project technical coordinator and reporting to the Chief Forest Officer.

Responsibilities:

(a) Collect and review all existing documents and data on mechanical wood products demand trends and future projections. Also collect and review all other relevant data such as demographic statistics, housing starts, GNP and per capita income statistics.

(b) Interview relevant government and business persons on forest product market trends and projections.

(c) Conduct field visits to sawmills, plywood mills and other mechanical wood products factories to ascertain the type and quality of products currently and potentially produced.

(d) Visit relevant institutions in Nairobi and selected European and Middle East countries to ascertain the demand potential for Ugandan mechanical wood products.

(e) Analyze the data on hand and prepare demand projections for likely mechanical products, including sawntimber and plywood within Uganda. Examine the sensitivity of such projections to such factors as population growth and per capita GNP and income.

(f) Prepare a report with funds on market trends and projections, and include all supporting data and information as well as details of all assumptions.

(g) Make recommendations on actions to be undertaken by Government and/or the private sector to re-establish an export market for Ugandan timber products, and assess their cost.

(ii) Terms of Reference for Pulp and Paper Products Market Analyst

Location: Kampala, other relevant towns in Uganda, Nairobi and relevant European and Middle East Markets.

Duration: Four months.

Qualifications: Degree in Economics and Engineering.

Experience: At least 15 years experience in market analysis with at least 5 years experience in pulp and paper products marketing. A thorough knowledge of the current pulp and paper products market in Central and East Africa.

Position: Under the supervision of the project technical coordinator and reporting to the Chief Forest Officer.

Responsibilities:

(a) Collect and review all existing documents and data on pulp and paper products demand trends and future projections. Also collect and review all other relevant data such as demographic statistics, housing starts, GNP and per capita income statistics.

(b) Interview relevant government and business persons on forest product market trends and projections.

(c) Visit softwood plantations, assess their locations with relation to population, assess the economics of establishing a pulp and paper industry in Uganda, recommend on the appropriate location and revision to softwood plantation planting program to insure sufficient supply of raw material at minimum transport cost.

(d) Visit relevant institutions in East Africa to ascertain the demand potential for Ugandan pulp and paper wood products. These should include existing mills in Tanzania and Kenya, where product out-turn, export potential to Uganda and import potential of pulp from Uganda would be discussed.

(e) Analyze the data on hand and prepare demand projections for pulp and paper products within Uganda. Examine the sensitivity of such projections to such factors as population growth and per capita GNP and income.

(f) Prepare a report with on market trends and projections, and include all supporting data and information as well as details of all assumptions.

(g) Make recommendations on actions to be taken by Government and/or the private sector to establish a pulp and paper industry in Uganda and assess their costs.

M. FOREST INVENTORY

(i) Terms of Reference for Inventory Specialist

Location: Based in Kampala but with field work in all high forest coniferous plantation areas.

Duration of Assignment: Fifteen manmonths (initially 14 months, then one month about 12 months later).

Qualifications: Degree in Forestry

Experience: At least 12 years experience in forest inventory and management (including woody biomass assignments), with at least two years experience in tropical high forest inventory and management.

Position: Advisor in forest inventory responsible to the Chief Forest Officer and working in conjunction with the officer-in-charge of the Biometrics Section of the Resource Management Division and appropriate official in the Ministry of Energy.

Responsibilities:

(a) Assist with drawing up program for the carrying out a management and biomass inventory in nonprotected high forest and those coniferous plantations not having a recent satisfactory inventory. The program would include detailed specifications for methodology and the type of sampling; manning schedules; and vehicle, equipment and material requirements over the inventory period.

(b) Assist with planning procedures for these inventories, including the procurement of aerial photography for the designated areas at 1:25,000 scale, the procurement of base maps at 1:50,000; the initiation of forest type mapping using up-to-date aerial photography; and the logistics of moving teams and carrying out the inventory over all the areas in which it is required.

(c) Initiate and assist with training programs for inventory crews. These would retrain or train forest officers, forest rangers and forest guards in basic inventory techniques as well as in the specific methodology to be employed during these inventories.

(d) Assist with the early management of the inventories, including personnel logistics and the carrying out of field checks.

(e) Assist with drawing up specifications and implementing destructive sampling for defect studies and regression analysis to determine the relationship between measurable parameters and the volume of industrial wood as well as the volume or weight of woody biomass normally utilized.

(f) Supervise the initial compilation and calculation of inventory results in collaboration with the computer programming specialist.

(g) Continually involve counterparts in the planning, operational and analysis procedures of the inventories so as to effectively train them to assume full and competent control.

(ii) Terms of Reference for Computer Programming Specialist

Location: Kampala

Duration of Assignment: Four months (three months in the first year, and one month a year later).

Qualifications: Degree in Management Information Systems or equivalent.

Experience: At least eight years experience in programming relating to management information systems, with at least 12 months experience in such systems as they relate to forestry, biomass assessments and programming for forest inventories.

Position: Responsible to the officer-in-charge of the Biometrics Section, under the supervision of the Technical Coordinator and in conjunction with the inventory specialist.

Responsibilities:

(a) Review the inventory data (management and biomass) and draw up a program for compiling and analyzing said data to obtain the necessary outputs required for forest management and farm forestry implementation programs.

(b) Assist with regression analysis of volume parameters to establish volume regressions for species groups.

(c) Establish a a management information data base for use in planning future forest resource development, management and farm forestry programs. Such a data base would include inventory data, growth data and forest product demand projections, as well as resource development cost estimates and inputs and market prices for forest and woody biomass products. The forest product market information would come from market specialist hired under this project.

N. FOREST TRAINING SPECIALIST

Location: Nyabyeya Forest College, New Fort Portal

Starting Date: Nine months under PPF

Duration: 33 months

Duties: The Forest Trainer would be responsible for revising existing and establishing new curricula for all forest training activities, including training and refresher training. He would be directly responsible to the CFO, but would form part of the project implementation team. In the nine months prior to project start-up, he would review the training needs of existing staff in the light of the proposed project, review and revise curricula for rangers and foresters, develop a work program for Nyabyeya teaching staff and ascertain their training needs, and draw up a list of equipment needs.

Through the project he would:

(a) Continue to revise curricula as necessary;
(b) Participate directly in teaching as required;
(c) Assure periodic participation of other FD members in forestry teaching;
(d) Identify appropriate overseas training programs;
(e) Work with the Forestry Department of Makerere University to revise University curricula, with particular emphasis on field training and farm forestry;
(f) Ensure closer liaison between Nyabyeya Forest College and FD activities; and
(g) Assist those responsible for farm forestry in preparation of training courses at DFI's.

Qualifications: The candidate would be a forester with experience in field operations and training, a degree in Forestry and at least 15 years experience. He should have specific experience in social forestry and training needs for effective farm forestry extension. He should have well-established contacts with forestry training colleges and universities.

O. PLANTATION MANAGEMENT SPECIALIST

Location: Kampala and the industrial coniferous plantations.

Duration: Nine man months (three months initially then two months in each of the next two years.

Qualifications: Degree in Forestry

Experience: Minimum of 12 years experience in coniferous plantation management with at least one year spent in developing countries.

Position: Reporting to the Chief Forest Officer and working with senior officials in the Resource Management Division of FD.

Responsibilities:

(a) Carry out field inspections of the plantations and review any existing management plans, compartment records and plantation journals as well as any inventory data to hand.

(b) Finalize guidelines for pruning and thinning prescriptions for Cupressus and Pinus species bearing in mind the lack of silvicultural treatments over the previous 15 years.

(c) Assist with supervising the implementation of pruning and thinning operations in the plantations, having first determined in conjunction with counterparts the treatment for given compartments.

(d) Assist with drawing up the technical prescriptions and overall outline for revised plantation management plans.

P. WOOD UTILIZATION TRAINING
(For internationally recruited consultants)

(1) Sawmill Design and Operations Specialist

Location: Nakawa (Kampala)

Duration: 14 months

Qualification: Degree in Engineering

Experience: Minimum of 15 years experience in the design and operational aspects of the sawmilling industry including at least a total of 12 months experience in sawmilling in developing countries, preferably Africa. Experience in transfer of technology and in the preparation and implementation of training programs.

Position: Sawmill design engineer and training officer reporting to the Chief Forestry Officer and officer-in-charge Utilization Center.

Responsibilities:

(a) Redesigning the Nakawa sawmill to serve as a training base for sawmill operators, supervisors and saw doctors. Wood flows must be redesigned for maximum efficiency and the green chain and timber drying areas improved. A conifer line will be included.

(b) Detailed diagrams for use in reconstruction will be provided together with necessary explanatory reports.

(c) Estimates will be made of demolition and reconstruction costs.

(d) Existing equipment will be critically reviewed and additional equipment items as well as spare parts for repairing old equipment itemized and costed in line with the items shown in Working Paper No. 6.

(e) Responsible for advising on tender specifications for the above equipment and spare parts as well as for advising on tenders submitted.

(f) Supervising the reconstruction of the mill and installation of equipment.

(g) Responsible for drawing up syllabi and programs to train or retrain sawmill operations and supervisors. Liaison would be maintained with local sawmill owner/managers. Training would include basic principles and safety precautions as well as specific operational training on equipment present. Courses would also be prepared and conducted for supervisors/managers on operational management.

(h) Course materials would be prepared in conjunction with local counterparts who would eventually receive sufficient knowledge and experience under the guidance of the consultant to operate independently as instructors.

(i) Conduct initial courses and supervise training carried out by counterparts.

(ii) Sawdoctor Instructor

Location: Nakawa (Kampala)

Duration: Six months (two periods of three months)

Qualification: Diploma or certificate in sawdoctoring

Experience: Minimum of 10 years sawdoctoring experience on both band and circular saws. At least six months should have been spent working in developing countries. Experience is also required in the preparation and implementation of training programs.

Position: Sawdoctor instructor responsible to the officer-in-charge, Utilization Center.

Responsibilitie

Responsibilities:

(a) Drawing up syllabi and programs for training in harvesting operations including felling and skidding. Training would include the basic principles as well as safety procedures. Felling operations would include the use of both cross-cut saws, bow saws and chainsaws. The maintenance and care of equipment will also be included.

(b) Preparing course materials after reviewing local forest and plantation conditions.

(c) Conducting training courses in conjunction with local counterparts who would gradually assume greater responsibility for training with the successful transfer of technology.

Q. SILVICULTURAL RESEARCH SPECIALIST

Location: Nakawa (Kampala) and field stations.

Duration: Five manmonths (spread over four years)

Qualifications: Masters in Forestry

Experience: At least 15 years experience in forestry with at least 5 years having been spent in silvicultural research with some tropical or sub-tropical experience.

Position: Reporting to the Principal Research Officer and under the supervision of the Technical Coordinator, the specialist would work with national counterparts in the Silvicultural Research Section.

Responsibilities:

(a) Assist with collecting all available past research data on natural forest silviculture and plantation species trials for the country. Arrange for a critical review of this data and compilation of relevant information for future reference.

(b) Conduct field visits to the more important field trials to assess their future usefulness for research.

(c) Considering the results of past research and in conjunction with national counterparts, design and initiate the establishment of new and/or complimentary:

- research plots to study natural high forest dynamics and silviculture under various cutover and improve or enrichmemnt conditions;

- species, provenance and fertilizer trials in relevant areas.

The research conducted should be relevant and form part of a strategy that considers the priority resource development objectives of the FD.

(d) Establish criteria for the rehabilitation or scrapping of old research trials and set out procedures for the rehabilitation of appropriate trials.

(e) Establish procedures and schedules for the maintenance and monitoring of both rehabilitated old trials or plots, and those newly established during the project.

(f) Participate in some monitoring and ensure that data is being properly collected, compiled and analyzed, and that plots are being properly maintained.

(g) Provide input into future research strategies and programs as to their direction and content.

(h) Make recommendations on books and periodicals to be purchased for the Research Center Library.

(i) Prepare periodic and terminal report on the research activities, as well as assist in or prepare technical papers and articles on the research being conducted.

R. CHARCOAL MANAGEMENT SPECIALIST

Location: Budongo, Bunyoro and Mabira, Buganda

Duration: 2 months ASAP after start up followed by 2 month in years 2 and 3

Qualifications: Degree in forestry or equivalent. At least 10 years experience in the management of tropical high forest. Extensive knowledge of charcoal-making both technical and in the planning of large scale enterprises using labor intensive methods.

In conjunction with the Utilization Officer and a Charcoal Development Officer and in liaison with the relevant Forest Department field staff to:

(i) plan, organize and initiate a practical system of refining the natural high forest, after logging, using charcoal makers.

(ii) plan a cost-effective method of enrichment planting to follow refining.

(iii) initiate a comparative study of low-cost traditional kilns, i.e. long kiln, round kiln and Casamance kiln and decide on what should be done if necessary to introduce and promulgate the use of the most efficient type(s).

(iv) to examine the marketing of charcoal and to look at the possibility of improvement through joint hiring of transport or the formation of marketing cooperatives.

(v) to write a report on the results which can be used by the Forest Department as a base for extending the use of charcoal refining and enrichment to all areas of tropical high forest logging activity.

S. NATURAL BIOMASS INVENTORY CONSULTANT

Terms of Reference for Consultant to Prepare Detailed TOR's, Work Plan and Cost Estimates for the National Biomass Inventory

Background: Under the proposed Uganda Forestry Project (UFRP) provision is made for some US$650,000 to fund a merchantable inventory of selected natural high forests and plantations which would be used for forest management and harvesting purposes. Provision is also made under this project for assessing the total biomass of the areas covered by this inventory.

In addition, under the ongoing IDA financed Second Power Project, funds are earmarked for carrying out a biomass inventory of the country's main fuelwood, pole and fodder supply areas. It is intended that this be carried out in tandem with the natural high forest and plantation inventory.

Both inventories will be the responsibility of the Uganda Forest Department (UFD). The UFRP technical assistance component includes a forest inventory specialist and a computer programming specialist both of whom would be consulted on and associated with the national biomass inventory. However, the national biomass inventory would be done by another group of specialists under detailed terms of reference still to be drawn up.

Location: Based in Kampala but with visits to selected woody biomass supply "watersheds" for the country's main urban and wood deficit areas. Visits would also be made to representative natural high forest and plantation areas so that necessary linkages between the two inventories can be determined.

Duration: Three weeks including travel time: two in the field and one preparing the detailed terms of reference for the consultants who would carry out the biomass inventory.

Qualification: Degree in Forestry.

Experience: At least 15 years experience in forest inventory including the formulation, implementation and analysis of biomass inventories. Experience in tropical forest inventories and management would be an advantage.

Position: Consultant to the Chief Forest Officer working in conjunction with the officer-in-charge of the Biometrics Section of the Resource Management Division of the Ministry of Agriculture and Forests and appropriate officials in the Ministry of Energy.

Responsibilities: Determine the extent of the existing knowledge on the quantity and quality of biomass in the country This assessment would include fuelwood, poles and fodder.

Collect and review existing data and information on biomass in Uganda.

Ascertain the variation in the biomass types and identify the priority areas to be included in the biomass inventory so as to gain an understanding of the logistical problems involved in carrying out the inventory.

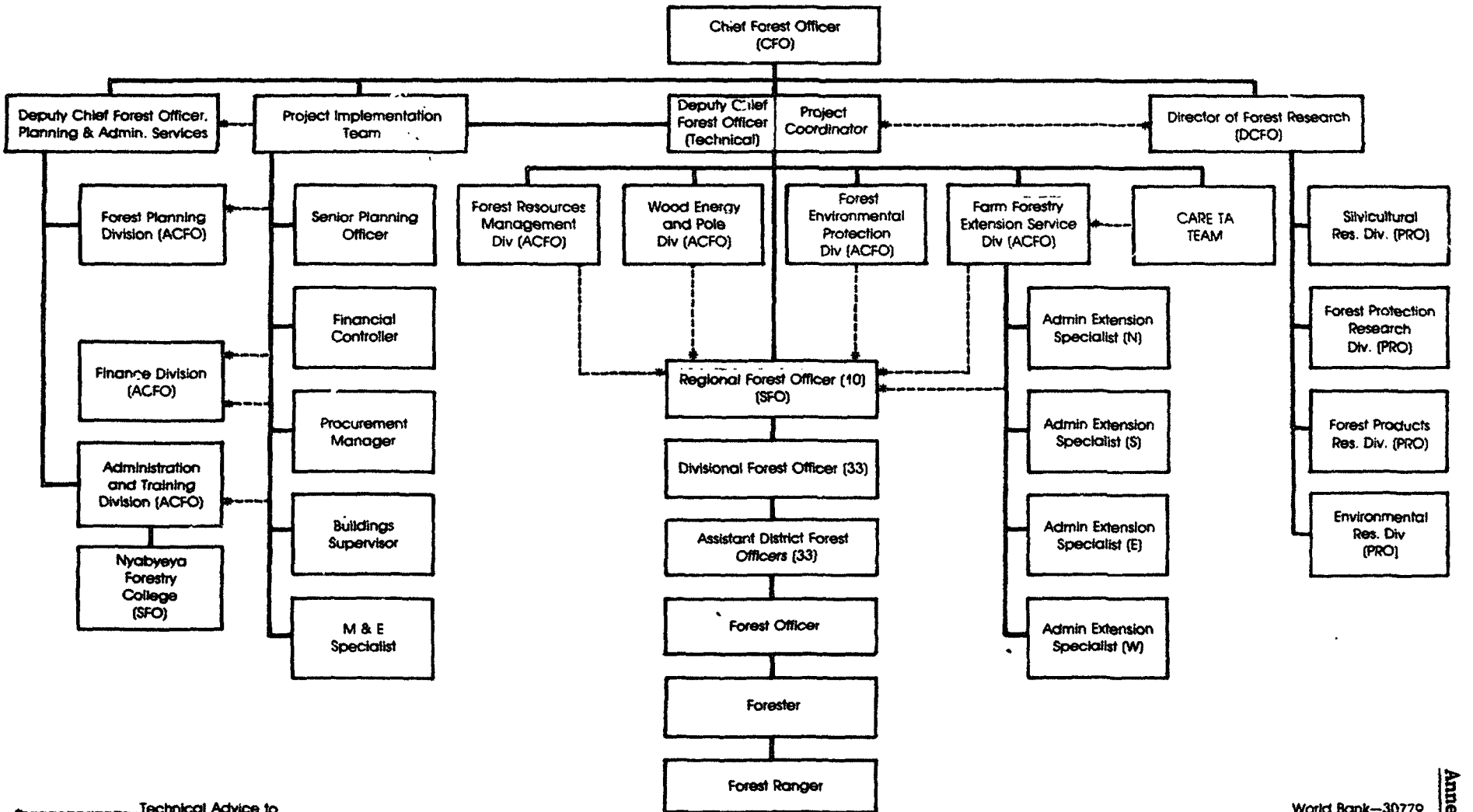
Assess the UFD's capabilities in regard to trained manpower and availability of equipment (including that which will be provided under the UFRP) to carry out the biomass inventory.

Assess the suitability of existing satelite imagery (landsat and spot) and aerial photography and determine the need for further imagery and/or photography.

Draw up detailed terms of reference for the technical assistance to be provided by consultants in carrying out the national biomass inventory of selected priority areas which would be undertaken with the US$2.5 million provided by the Second Power Project. This would include a detailed work plan and cost estimates showing man-month requirements for each expert. Details of the expected qualifications and experience of each expert would also be provided together with full description of their duties and expected outputs in terms of reports and technical papers to support the completed biomass inventory.

Prepare a standard IDA international competitive bidding draft letter of invitation for bids from competent consultants to carry out this inventory.

UGANDA
FORESTRY REHABILITATION PROJECT
Forest Department Organization Chart



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Annex 8

UGANDA

FORESTRY REHABILITATION PROJECT

Properties and Uses of Tree Species for Farm Forestry Activities

Scientific Name	Common Name	Drought Resistant	Soil Improver	Coppicer	Fuelwood, Poles and Timber	Browse & Fodder	Soil Conservation Improvements	Hedge & Fencing	Ornamental and Shade	Fruit Oil or Cash Crop	Honey Production	Shelter Belts	Susceptible to Termites	Indigenous	Remarks
Acacia albida		x	x		x	x	x		x						
Acacia auriculaeformis		x	x	x	x		x		x					x	Very promising in dry areas as agroforestry species.
Acacia campbiae				x	x		x								Promising fuelwood species on poor soils southern temperate gr
Acacia mearnsii	Black wattle		x	x	x		x								From North Queensland - worth trying.
Acacia nilotica	Egyptian thorn	x			x	x			x						Suitable in higher elevations - Mt. Elgon.
Acacia senegal	Gum arabic	x			x	x								x	Excellent source of tannin.
Acacia tortilis	Umbrella thorn	x		x	x	x	x		x					x	Source of gum arabic.
Acrocarpus fraxinifolius					x		x		x					x	Very valuable fuelwood and browse species for dry areas.
Albizia coriaria			x		x	x						x		x	
A. fumigera			x		x									x	
A. gummifera			x		x									x	
A. zygia			x		x	x			x		x			x	
Anacardium occidentale	Cashew nut	x								x			x	x	Young leaves eaten as cooked vegetables.
Azadirachta indica	Neem			x	x	x	x		x	x					
Balanites aegyptiaca	Desert date	x			x	x	x		x	x					Oil from seed can be used as substitute for paraffin.
Bischoffia javanica									x						Edible fruit.
Butyrospermum paradoxum	Shea butter									x					
Cajanus cajan	Pigeon pea	x	x		x	x	x							x	Produces an edible fat.
Calliandra calothyrsus			x	x	x	x	x		x		x				Pulse crop, woody stalks good for fuel.
Carica papaya	Pawpaw									x					Very promising multi purpose agroforestry species.
Cassia siamea		x	x	x	x				x			x			Southern temperate grass.
Casuarina equisetifolia					x		x		x						Excellent poles not good mixed with foodcrops
Chlorophora excelsa	Iroko		x		x		x				x	x			Grow easily from seed.
Cupressus lusitanica	Cypress			x	x				x					x	
Citrus limon	Lemon							x							Excellent intercropping species. Valuable timber.
Elaeis guineensis	Oil palm									x					Excellent construction timber.
Grielumtrya japonica	Loquat									x					
Eucalyptus camaldulensis	Red river gum	x		x	x					x		x	x		West African oil palm.
E. grandis	Rose gum			x	x										Suitable for drier, lower elevations.
E. gomphocephala	Tuart	x		x	x							x	x		
E. paniculata	Grey iron bark			x	x							x			
E. robusta	Swamp mahogany			x	x						x				
E. torelliana	Hybrid			x	x						x				
Gliricidia sepium	Mother of cocoa		x		x	x	x	x	x		x	x			
Grevillia robusta	Silk oak		xy		x				x		x				Promising multi purpose agroforestry tree.
Jacaranda mimosifolia	Jacaranda				x		x		x						Shade for tea and coffee.
Khaya anthotaca					x				x						
Lonchocarpus laxiflorus	Apli Apli		x	x	x	x	x	x	x					x	
Maerua triphylla	Mar Mwale nut									x					Very promising multi purpose agroforestry tree
Mangifera indica	Mango	x			x				x	x				x	
Markhamia platycalyx				x	x				x					x	Excellent intercropping species in plantations
Parkinsonia aculeata	Jerusalem thorn	x		x	x	x	x	x	x						Very promising for planting in cropland Excellent building
Pseudiera edulis	Cremastis									x			x		Very promising for drier areas.
Persea americana	Avocado									x					
Pinus caribaea					x										
P. caribaea					x										
P. patula					x										
Prosopis juliflora	Mesquite	x	x	x	x	x	x	x							With P chilensis very promising fuelwood, charcoal and
Psidium guajava	Guava	x								x					browse species in dry areas.
Sesbania sesban			x		x	x	x		x		x			x	
Spathodea nilotica	Nandi Flame								x						Very promising multi purpose agroforestry tree as is E. grand
Tamarindus indica	Tamarind	x			x	x	x		x	x					Ornamental/shade only.
Tabebuia Donnell		x			x		x		x					x	Good for dry areas.
															Wood good for mortars and pestles

PROPOSED REVISED STATEMENT ON UGANDA FOREST POLICY (1986)

The proposed revised Forest Policy of the Republic of Uganda is as follows:

1. To maintain and safeguard enough forest land so as to ensure that:

   i) sufficient supplies of timber, fuel, pulp, paper and poles and other forest products are availabe in the long-term for the needs of the country, and where feasible for export;

   ii) water supplies and soils are protected, plants and animals (including endangered ones) are conserved in natural ecosystems, and forests are also available for amenity and recreation.

2. To manage the forest estate so as to optimize economic and environmental benefits to the country by ensuring that:

   i) the conversion of the forest resource into timber, charcoal, fuelwood, poles, pulp and paper, and other products is carried out efficiently;

   ii) the forest estate is protected against encroachment, illegal tree cutting, pests, diseases and fires;

   iii) the harvesting of timber, charcoal, fuelwood, poles and other products applies appropriate silvicultural methods which ensures sustainable yields and preserves environmental services and biotic diversity;

   iv) research is undertaken to improve seed sources for planting stock and the silvicultural and protection methods needed to regenerate the forest and increase its growth and yield. Research is also carried out into new and existing forest products, including tourism and education with the object of maximizing their utilization potential. Research is undertaken to monitor and promote the preservation of environmental services and conservation of biotic diversity.

3. To promote an understanding of forests and trees by:

   i) establishing extension and research services aimed at helping farmers, organizations and individuals to grow and protect their own trees for timber, fuel and poles and to encourage agro-forestry practices;

   ii) publicizing the availability and suitability of various types of timber and wood products for domestic and industrial use and publicizing the importance of environmental services provided by forests;

   iii) holding open days at regular intervals in all districts to demonstrate working techniques and bring attention to the positive benefits of forestry.

   iv) promoting scientific research, environmental tourism, education, and related activities inside the forest estate.

Annex 11

Material Available in Implementation Volume and Project File

The documents available in project files support the SAR and are intended to assist UFD with implementation of the project. They are indicated as SAWP (Staff Appraisal Working Papers); the whole volume is entitled Implementation Volume.

1. SAWP 1 Peri-urban Plantations and Pilot Wood Farms.
2. SAWP 2 Farm Forestry Program.
3. SAWP 3 Natural Forest Management Rehabilitation.
4. SAWP 4 Rehabilitation of Softwood Plantations.
5. SAWP 5 Forestry Department Rehabilitation: Sawmill Training, Nakawa.
6. SAWP 6 Forestry Research and Seed Production.
7. SAWP 7 Royalties for Wood Products.
8. SAWP 8 List of Concessions, Their Validity and Operational Status.
9. SAWP 9 Forest Inventory.
10. SAWP 10 The Energy Context.
11. SAWP 11 Detailed Economic Analysis Assumptions.
12. SAWP 12 Forest Department Rehabilitation.

The following Preparation Report documents are available:

Uganda Fuelwood/Forestry Project Feasibility Report, March 1986 accompanied by the following working papers:

Project File Working Papers

1. Peri-urban Fuelwood/Forestry
2. Expanded Farm Forestry Program
   Appendix 1: Options for the Administration of Government Social Forestry Rehabilitation
3. Energy from Charcoal and Fuelwood
4. Natural Forest Management Rehabilitation
5. Nature Reserves and Gene Conservation
6. Industrial Plantation Management Rehabilitation
7. Forest Industries
8. Softwood Resource Promotion and Development
9. Sociological Survey for Rural Tree-Growing
10. Forestry Department Management Rehabilitation
    Appendix 1: Silviculture and Protection Research
11. Civil Works
12. Forest Inventory
13. Economic Analysis
14. Terms of Reference for Technical Assistance

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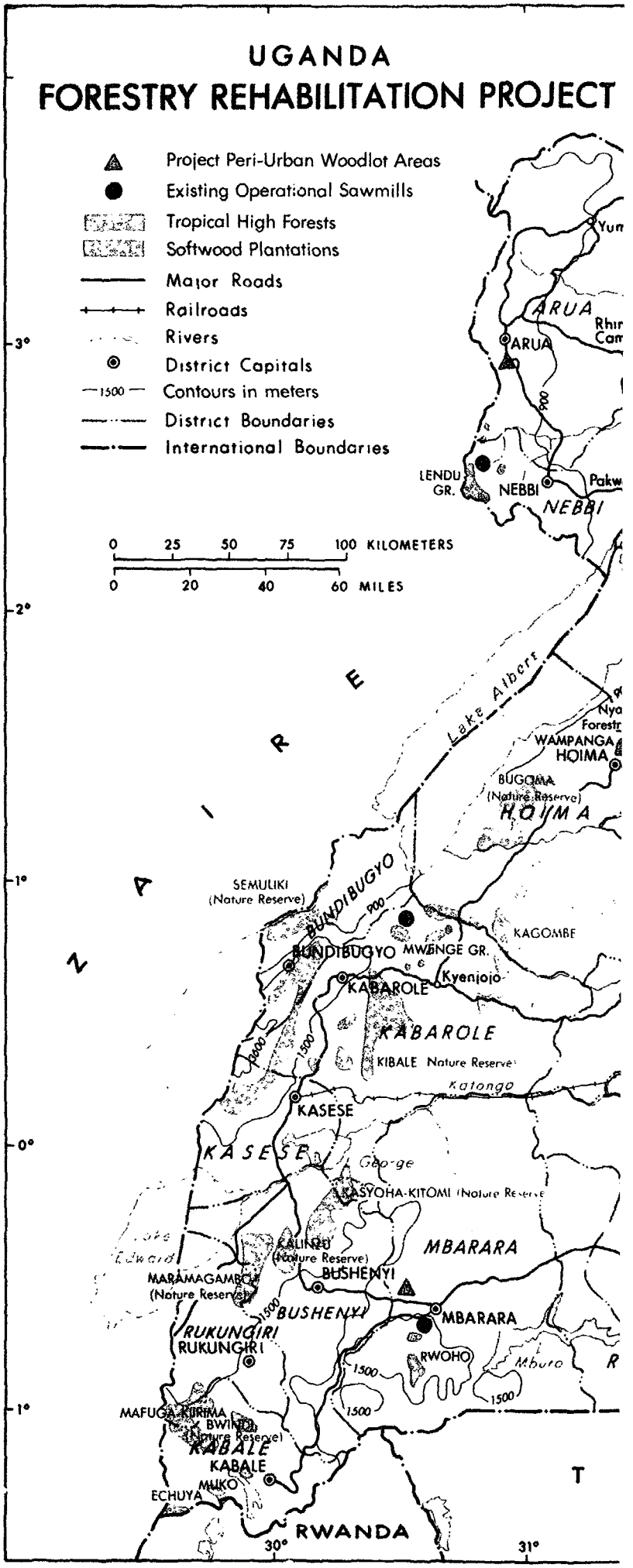
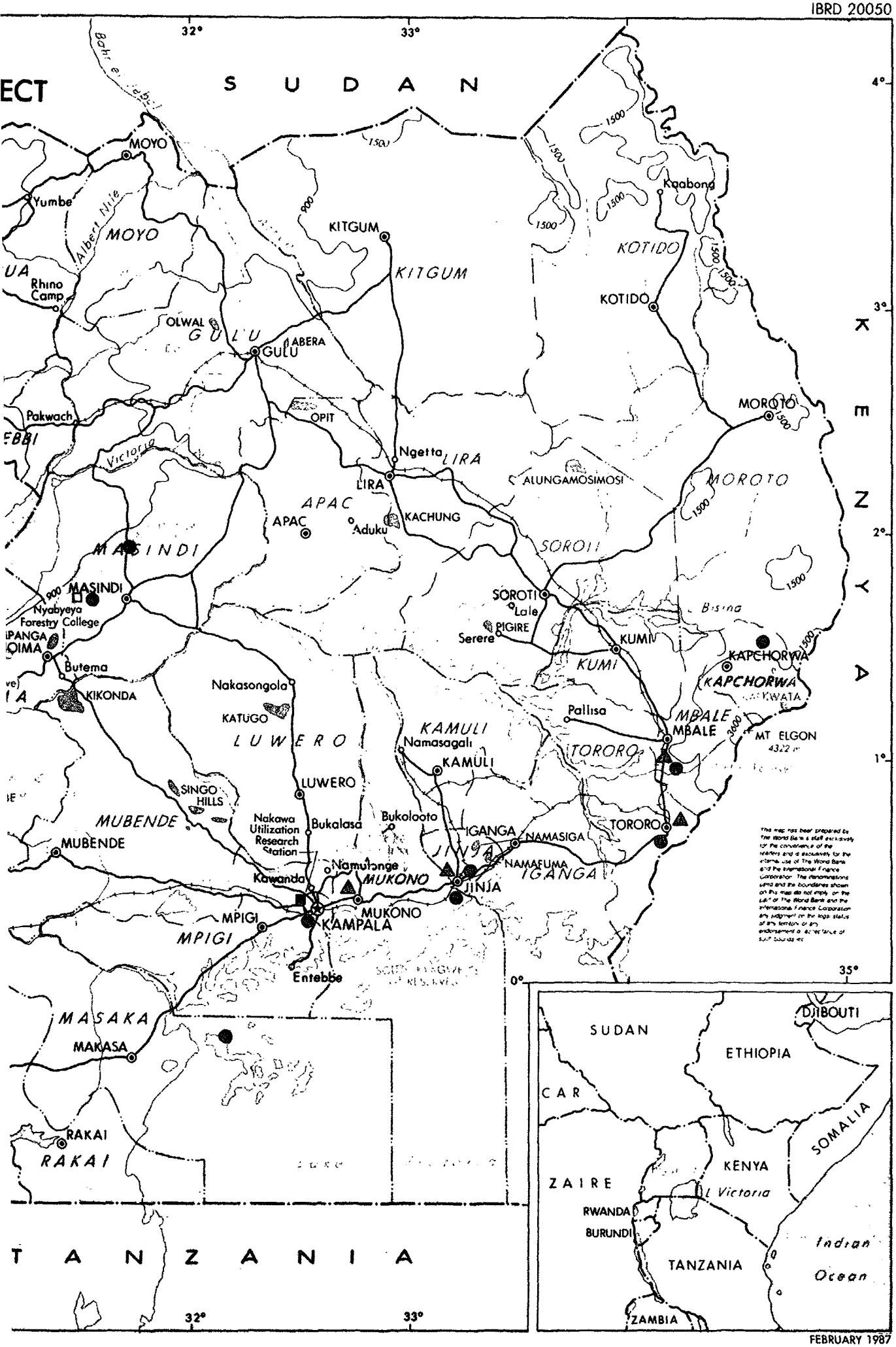

UGANDA
FORESTRY REHABILITATION PROJECT
Project Peri-Urban Woodlot Areas
Existing Operational Sawmills
Tropical High Forests
Softwood Plantations
Major Roads
Railroads
Rivers
District Capitals
1500 Contours in meters
District Boundaries
International Boundaries
0 25 50 75 100 KILOMETERS
0 20 40 60 MILES
ARUA
NEBBI
LENDU GR.
Lake Albert
WAMPANGA HOIMA
BUGOMA (Nature Reserve)
HOIMA
SEMULIKI (Nature Reserve)
BUNDIBUGYO
KAGOMBE
MWENGE GR.
KYENJOJO
KABAROLE
KIBALE Nature Reserve
Katonga
KASESE
George
KASYOHA-KITOMI (Nature Reserve)
KALINZU (Nature Reserve)
MARAMAGAMBO (Nature Reserve)
BUSHENYI
MBARARA
RUKUNGIRI
RWOHO
Mburo
MAFUGA
KIRIMA
BWINDI (Nature Reserve)
KABALE
MUKO
ECHUYA
RWANDA
3°
2°
1°
0°
1°
30°
31°

IBRD 20050



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