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PROJECT COMPLETION REPORT

ZAMBIA

INDUSTRIAL FORESTRY PROJECT PHASE II

(LOAN 1424-ZA)

June 25, 1985

Eastern and Southern Africa Projects Department
Southern Agriculture Division

PRINCIPAL ABBREVIATIONS AND ACRONYMS USED

FAO	-	Food and Agriculture Organization
FD	-	Forest Department
FINNIDA	-	Finnish Development Agency
GRZ	-	Government of the Republic of Zambia
IFC	-	International Finance Corporation
INDECO	-	Industrial Development Corporation
IPD	-	Industrial Plantations Division
MLNR	-	Ministry of Lands and Natural Resources
RMEA	-	Regional Mission in Eastern Africa
UNDP/SF	-	United Nations Development Program/Special Fund
ZAFFICO	-	Zambia Forestry and Forest Industries Corporation

ZAMBIA

INDUSTRIAL FORESTRY PROJECT PHASE II (LOAN 1424-ZA)

PROJECT COMPLETION REPORT

Table of Contents

TABLES

ZAMBIA - INDUSTRIAL FORESTRY PROJECT PHASE II
(Loan 1424-ZA)

PROJECT COMPLETION REPORT

Preface

This is a project completion report (PCR) of the Industrial Forestry Project Phase II in Zambia, for which Loan 1424-ZA was approved on May 17, 1977 in the amount of US$16.8 million and closed March 2, 1984, after cancellation of US$0.1 million.

The PCR was prepared by the East Africa Regional Office and based on the Appraisal Report (No. 1429-ZA) dated April 20, 1977, the President's Report (No. P-2012a-ZA) dated April 29, 1977, the Loan Agreement, project files and data gathered during the appraisal of the follow-on Phase III Project.

The project was not selected for audit by OED as it is the second of a series of forestry projects, similar in nature, in Zambia. The first project (Loan 562-ZA) was completed in 1975, audited by OED in 1977, and generally considered to be successful.

The PCR was sent to the Borrower for comment on April 16, 1985. Comments received from Zambia Forestry and Forest Industries Corporation (ZAFFICO) have been taken into account in the final report, and are attached as Annex 1.

The assistance provided by the Government of Zambia and the staff of the project executing agencies is gratefully acknowledged.

ZAMBIA

Industrial Forestry Project Phase II (Ln 1424-ZA)

Project Completion Report

Basic Data Sheet

Key Project Data

	Appraisal Expectation	Actual or Current Estimate	Actual as % of Expectation
Total Project Cost (US$ million)	34.5	40.5	117
Underrun or Overrun (%)			
Loan/Credit Amount (US$ million)		16.8	--
Disbursed	16.8	16.7	99.4
Cancelled	--	.1	--
Repaid to IBRD	--	2.7 1/	--
Outstanding to IBRD	--	14.0 1/	
Date Physical Components Completed	Dec. 82	Dec. 83	
Proportion Completed by Above Date (%)	100	85	
Proportion of Time Underrun or Overrun (%)	--	20	
Economic Rate of Return (%)	20	15	
Financial Performance	Fair	Poor	
Institutional Performance	Fair	Poor	

Other Project Data

	Original Plan 2/	Revisions 2/	Actual or Est. Act.
First Mention in Files or Timetable	--	--	01/05/73
Government's Application	--	--	--
Negotiations	--	--	04/04/77
Board Approval	--	--	05/17/77
Loan/Credit Agreement Date	--	--	06/08/77
Effectiveness Date	--	--	11/15/77
Closing Date	--	--	02/03/84
Borrower	The Republic of Zambia		
Executing Agency	Industrial Plant. Division		
Fiscal Year of Borrower	January 1 - December 31		
Follow-up Project Name	Industrial Forestry Project Phase III		
Loan/Credit Number	Cr. 1437		
Amount (US$ million)	22.4		
Loan/Credit Agreement Date	3/16/84		

Mission Data

	Sent by	Month/Yr	No. of Weeks 3/	No. of Persons	Manweeks 4/	Date of Report
Identification	FAO/CP	1/73		2		
Preparation	FAO/CP	--	--	--	--	
Preappraisal	IBRD)				38	
Appraisal	IBRD)	7/76	17	4	68	4/77
Total					106	
Supervision I	IBRD/CDC	11/77	2	3	6	12/77
Supervision II	IBRD/CDC	8/78	2	3	6	9/78
Supervision III	IBRD	3/79	2	1	2	5/79
Supervision IV	IBRD	2/80	3	3	9	3/80
Supervision V	IBRD/CDC	12/80	4	3	12	2/81
Supervision VI	IBRD	4/81	3	1	3	5/81
Supervision VII	IBRD	1/82	3	3	9	3/82
Supervision VIII	IBRD	8/82	2	2	6	9/82
Supervision IX	IBRD	8/83	1	1	2	9/83
Total			22		55	

Country Exchange Rates

Name of Currency (Abbreviation)		Zambia Kwacha (ZK)
Year:	Appraisal Year Average	Exchange Rate: US$1 = K0.80
	Intervening Years Average	US$1 = K0.88
	Completion Year Average	US$1 = K1.23

1/ As of December 84.
2/ No information available.
3/ No. of 5 day week shown in the mission report plus travel time, except in the case of appraisal where elapsed time is shown.
4/ No. of weeks times No. of persons.

ZAMBIA

INDUSTRIAL FORESTRY PROJECT PHASE II
(Loan 1424-ZA)

PROJECT COMPLETION REPORT

Highlights

The project's main components were the planting of 15,000 ha of pine and 2,500 ha of eucalyptus, replanting of 2,000 ha of eucalyptus; maintenance of the new and existing plantations established under the previous-phase; doubling of logging and transportation capacity from 60,000 m^3 per year; construction of a sawmill of about 40,000 m3 per year sawn wood capacity; staff training; and experimentation and research aimed at reducing land clearing costs by developing efficient charcoal production methods.

The major part of the project was the afforestation component, the appraisal targets for which were exceeded. However, on the institutional and managerial aspects, the project had not been able to reach the expected maturity. As a result, the staffing, training and general productivity of the project were affected. Institutionally, the most significant problem was the four-year delay in incorporating the project's implementing agency, the Industrial Plantations Division (IPD), into a commercial entity. This compelled IPD to continue to function within the restrictive civil service rules.

In addition to the institutional problem, the project seems to have suffered from a design shortcoming, in that Phase II had not given sufficient consideration to all the operations of IPD and thereby not encouraging evaluation of IPD as a total organization during supervision/ implementation. Since the industrial operations of IPD other than the proposed sawmill were not included, no proper evaluation or follow-up of the training needs or its engineering efficiency was carried out during supervision.

There was about a 17% overrun on the cost of the Project. The afforestation costs turned out to be higher than the appraisal estimates owing to escalated land clearing costs and higher costs of labor arising mainly from a general salary increase. The construction of the sawmill was also delayed by four years resulting not only in inflated costs but also in lost revenue. The higher costs were not fully offset by the higher prices that IPD charged for its products. Additionally, the Project was affected adversely by the worsening economic conditions (e.g. financial and foreign exchange crisis) that GRZ faced during the last three years of the Project. The economic rate of return of the project is now estimated to be 15% as against 20% at appraisal.

Over 99% of the loan was disbursed, and the Project exceeded its targets in the afforestation component. The general progress of the Project was considered reasonable, and it formed the framework for involvement by the Bank/IDA in a further phase. On balance the project is considered to have been reasonably successful.

The following points are of particular interest:

- although the funds were fully utilized for the training component, the program as carried out was not satisfactory; a proper assessment involving a systematic analysis of the skill gaps was not carried out as expected by the Bank in the early years of the Project (paras. 3.15-3.18); and

- IPD's staffing problems were partly due to civil service rules to which it was subject and partly to lack of management action (paras. 5.01-5.04); almost all of the staff are civil servants with little experience in private sector operations (para. 6.08).

ZAMBIA

INDUSTRIAL FORESTRY PROJECT PHASE II (LOAN 1424-ZA)

PROJECT COMPLETION REPORT

I. INTRODUCTION

1.01 This project is a follow-up to the Industrial Forestry Project Phase I (Loan 562-ZA) which was the Bank's first involvement in the long-term industrial forestry program of Zambia. Phase I was completed in 1975 and was generally considered to be a successful project. Phase II was approved by the Board in May 1977 and the loan was closed in February 1984 after disbursing over 99% of the loan. A third phase project was approved by the Board in February 1984. This PCR is based on material gathered during appraisal of Phase III and on information obtained from the Bank's files and updates received from the Borrower.

Forestry Subsector

1.02 The forestry resources in Zambia consist of natural (indigenous) forests and man made plantation forests. About 370,000 km2 or nearly half of the total land area of Zambia are covered by two main types of natural forests, firstly the closed forests, typified by the Zambia teak forests situated in the Southern and Western parts of the country and secondly open woodlands of which the "miombo" woodlands are the most extensive. Only slightly more than 7 million ha of a total of 37 million ha of indigenous forests are gazetted and nominally under the protection of the Forest Department (FD). About 70% of the gazetted forests have some management including concessions for felling of timber or firewood. However, the Government has very little control over these areas because of chronic manpower and budget constraints. The average yield of commercial sawlogs in these forests varies between 5 and 13 m3/ha and about 50 m3/ha of poles and firewood.

1.03 The indigenous forests are a declining resource and are slow to regenerate. In the easily accessible areas, mainly close to cities and along the line-of-rail, they have been exploited for a long time and are now virtually depleted. Increasing transport distances and lower yields would make it difficult to exploit the remaining forests economically in the future. On average, the indigenous forests take about 50 to 60 years to produce sufficient sawlogs with appropriate diameters, while eucalyptus would provide similar dimensions in about 12 years and pine in 25 years.

1.04 To solve the problems of long gestation periods and difficult commercial exploitation associated with the indigenous species, the Government decided to embark on a long-term industrial forestry program. The FD started growing pines on the Copperbelt, at first on an experimental scale near Ndola, and then on an increasingly larger scale around Ndola and west of Kitwe. To implement this program, an Industrial Plantations Division of the FD was created in 1962.

1.05 A Bank loan of US$5.3 million was provided to finance a first phase (Loan 562-ZA) of the long-term afforestation program. The first phase was completed by 1975 but at a cost over the estimated amount owing mainly to inflation, and its target of 16000 ha was reached in seven years as against eight as envisaged at appraisal. The actual exploitation of wood in Zambia continued to be only a small fraction of the potential, due to ineffective utilization of the wood processing capacity. The Phase II project was designed to continue the government's long-term planting and maintenance program, expand longing and sawmilling capacity and conduct studies designed to lead to economical and efficient land clearing and charcoal production.

1.06 By the end of Phase II about 36,000 ha of pine and 7,500 ha of eucalyptus plantations had been established in the Copperbelt in the four major plantation areas at Ndola, Chati, Lamba and Ichimpe. The main species are Pinus kesiya, Pinus oocarpa, Eucalyptus grandis and Eucalyptus cloeziana. The age structure of these plantations mainly reflects IPD's plantation program followed in the last five years, during which period about 50% of total plantations were established. Their annual roundwood production potential (sustained yield) is currently estimated at 200,000 m^3 of pine and eucalyptus sawlogs, with another 120,000 m^3 in small logs.

Forestry Policy

1.07 The Government's major policy objectives for the forestry sub-sector are: (i) conservation of indigenous forests through conventional measures (e.g., forest protection and controlled exploitation), and (ii) protection of forest reserves in the water shed or river flow areas against soil erosion and river silting; and (iii) promotion of a viable forestry sub-sector through appropriate research, extension, reafforestation and wood processing programs.

Institutions

1.08 Responsibility for forestry policy, management, extension, research and training rests with the Forest Department, which is part of the Ministry of Lands and Natural Resources (MLNR). The Department is headed by the Chief Conservator of Forests, and comprises two main divisions, one for field staff and the other for specialists. The Industrial Plantations Division (IPD), which is now incorporated as Zambia Forestry and Forest Industries Corporation (ZAFFICO), was originally a branch of the Forest Department. IPD was responsible for implementing both Phases I and II. FD's responsibility for management includes the management of the gazetted forest estate, and control of the processing of wood products from gazetted forests for domestic and industrial use. Its extension and publicity work includes advisory services to private woodlot owners and the maintenance of a network of nurseries. Forestry research consists of (a) forest research on indigenous and exotic species; and (b) forest products research including charcoal kiln testing and timber preservation, seasoning and structure testing. The training function of the FD includes the training of Forest Rangers and Foresters in lower and higher level courses respectively at the Zambia Forest College at Mwekere near Kitwe. There are no facilities in the country for graduate training for forestry professionals. Short-term training on a number of technical subjects is provided by a Forest Workers Training Center at Chati, owned by IPD.

1.09 During the Phase I project it became clear that a properly coordinated approach towards forestry and forest industries was vital for the rational development of the sector. The ensuing discussions between GRZ, FD and Industrial Development Corporation (INDECO) were aimed at accomplishing this objective. Previously, statutory responsibility for plantations rested with the FD, but INDECO under the Ministry of Mines and Power had responsibility for exploitation of forests for industrial use. In 1976 INDECO became answerable to MLNR for its subsidiaries' dealing in importation and processing of sawn wood and other wood products. This arrangement was a major step towards establishing a coordinated approach toward forestry and it brought under MLNR all of the forestry related activities except the construction of a pulp and paper mill, the responsibility for which was to continue with INDECO.

Phase III

1.10 The Phase III Project (Cr. 1437-ZA) was presented to the Board in February 1984 and was made effective in September 1984. The Project is estimated to cost US$42.5 million with IDA providing financing up to US$22.4. The Project has been designed: (a) to improve the utilization of existing forestry investments in plantations and handling and processing facilities, with a view to increasing production and improving the quality of ZAFFICO's wood products and product mix to meet revealed market preferences and to reduce imports; (b) to improve and strengthen linkages between investments in forestry resources and wood-based industries; and (c) to strengthen the management and improve operational efficiency of ZAFFICO as a whole, with special reference to its operations in logging, sawmills and supporting services. These Project's objectives are consistent with the Government's sectoral objectives as well as its overall long-term policy objectives of economic growth and diversification. In particular the Project would address the training requirements of ZAFFICO staff consisting of in-service, long-term and on-the-job training involving about 900 project related personnel, improvements in logging and transportation, fire protection and Management Information Systems.

II. PROJECT IDENTIFICATION, PREPARATION AND APPRAISAL

Identification and Preparation

2.01 Towards the latter part of the Phase I project several discussions were held between GRZ and the Bank on the possibility of a Phase II project. It was clear at this time that the Bank's involvement was conditional upon GRZ accepting a coordinated approach towards the development of forests and forestry industries. Several studies were conducted by GRZ under the UNDP/SF Forest Industries Feasibility Study project which was executed by FAO. Within the frame work of this project, FAO engaged the services of Sandwell & Co (consultants) to determine the economic and technical feasibility of establishing units of appropriate type and size for the manufacture of sawnwood, wood panel products, and pulp and paper. Sandwell's reports on the feasibility of wood products and pulp and paper were issued in 1971. In 1974 with encouragement from the Bank and financial assistance from Finland, GRZ employed Jaako Poyry (JP) a firm of consultants to carry out another set of forest industries pre-investment

and market studies. This set of studies which updated most of the Sandwell and FAO data, recommended the establishment of the following plants: an unbleached pulp and paper mill of 55,000 TPA capacity by 1979-80, a particle board mill of 15,000 m^3 p.a. capacity by 1977-78, a new sawmill of 20,000 m^3 per annum capacity by 1983-85. However, further details as to the feasibility of individual projects was required before a determination could be made as to the size, species composition and phasing of a future industrial plantation program. For instance Eucalyptus grandis (EG), which was grown at an early stage of the plantation program and whfch was going to be available in large quantities, was expensive to saw, its waste factor was high and contrary to previous expectations the mines were reluctant to use EG for pit props, yet these were considered suitable for pulp and paper and particle board. Eucalyptus cloeziana on the other hand was considered better for the mines but not so suitable for pulp and paper. Decisions on these matters had a two way linkage on the existing and the planned plantation program and had to be considered before the Bank could set out to finance a Phase II.

2.02 The main parties to the continuing discussions on the project were INDECO, FD, MLNR, Ministry of Finance, Bank staff from Eastern Africa Projects and Programs Departments, Industrial Projects Department and staff from IFC. Since these parties represented different interests and specialization it was difficult to focus on the issues leading up to a coherent project proposal resulting in prolonged discussions during the preparation. The construction of a pulp and paper mill was the main preoccupation of INDECO and was in the forefront of all discussions. Based on the information available the Bank's view at this stage was that the pulp and paper mill would not be technically and economically viable owing to the market situation and therefore should be postponed. The question still had to be settled, as to whether in the face of uncertain prospects for increased wood utilization what components a Phase II operation should include. The Bank believed mistakenly that the Government agreed with its proposal to postponing the pulp and papermill, but later discovered that INDECO was persistent in its desire to have the mill built early. The Bank then reassessed the market conditions and with advice of consultants agreed that a pulp and paper mill would be feasible for Zambia in 1982/83. However, the issues to be resolved prior to any investment in the pulp and paper project were the verification of the market size and the securing of a technical and a financial partner. At this time there appeared to exist a general consensus between the Bank and other institutions involved that the pulp and Paper mill could in fact be slipped until its feasibility could be clearly established. With these developments the Bank was ready for the appraisal of a Phase II project.

Appraisal

2.03 Despite prolonged discussions on the various aspects of the forest industry there was no specific project proposal available, but instead there existed bnly a collection of technical and market studies and feasibility reports. The Bank decided to send a mission to pre appraise or appraise a second phase project depending on the information available. All feasible configurations involving increased sawmilling and logging capacity, particle board mill, the extension of industrial plantations and the growing of firewood were to be considered during the pre-appraisal

appraisal. The mission, comprising two Bank staff and two consultants arrived in Zambia June 1976 and was presented with a comprehensive shopping list of all connected forestry activities that GRZ wanted financed. After its field work the mission selected the following activities to recommend to the Bank's management for funding over a five year period, (1) annual planting of 4,000 ha; (2) doubling the logging capacity to 120,000 m^3; (3) new sawmill with a 20,000 m^3/yr sawnwood capacity; (4) fiber board mill; (5) charcoal production by FD; (6) study on the technical and economic feasibility of wafer board production; and (7) fellowships and training.

2.04 During the review process it was suggested that the Bank was not ready to participate in a pulp and paper venture until further studies relating to its market potential were carried out. Thus the plantation proposed in Phase II had to be economically justified with or without the pulp and paper mill. Further analysis was carried out and this confirmed that an economic rate of return of not less than 10% could be realized by the project based on sawmilling only and without the pulp and paper mill.

2.05 After further discussion within the Bank, a Phase II Project was designed to finance:

(a) about 3,500 ha of new plantations annually, of which about 3,060 ha would be pine and about 500 ha Eucalyptus (totals for the Project period: Pine 15,000 ha; Eucalyptus 2,500 ha);

(b) replanting annually approximately 400 ha of clearfelled plantations with Eucalyptus (total for the Project period: 2,000 ha):

(c) maintenance of (a) and (b), together with all existing IPD plantations;

(d) doubling of IPD's logging and transportation capacity from about 60,000 m^3 to about 120,000 m3 roundwood per year;

(e) construction and equipment of a sawmill of about 40,000 m^3 a year sawnwood capacity;

(f) staff training and fellowships to facilitate (a) to (e) above; and

(g) research, experimentation and studies designed to improve land clearing, and charcoal production methods.

2.06 The total cost of the project was estimated to be K27.5 million with financing to be provided from the following sources, Bank (49%) Commonwealth Development Corporation (18%) and Government (33%).

III. IMPLEMENTATION

3.01 The implementation of this phase was generally successful, with respect to the forest plantation establishment program, for which most of the appraisal targets for nursery production, land preparation and planting were surpassed. The maintenance of forest plantation, however, remained

far below appraisal targets, while only 70% of the established logging and transportation capacity was achieved during the project period. The slippage in the construction and operation of the new saw mill and the incorporation of IPD into a commercial entity adversely affected the project financially and organizationally. The limited success of some of these activities is traceable to a combination of staffing, funding and institutional drawbacks experienced during the implementation of the project.

Effectiveness and Start-up

3.02 The date of effectiveness specified in the Loan Agreement was September 8, 1977, subject to the additional condition that GRZ and IPD enter into an arrangement to make the proceeds of the loan available to IPD. These arrangements were formalized in a subsidiary loan agreement between GRZ and IPD on November 10, 1977. The agreement provided that adequate budgetary allocations be made annually from 1978 to 1982 for IPD's programs. However, except for the first two years there were no adequate budgetary allocations made to the project. The Loan was declared effective on November 15, 1977, two months after the specified date.

3.03 A two-year gap between the first and second phase projects had already left several IPD operations with insufficient budgetary support from GRZ. The gap resulted from the early conclusion of the Phase I project, having achieved its planting targets one year ahead of schedule and the slippage in the start of the Phase II. The negative impact of the time gap between the two phases on funding made it difficult to continue the recommended silvicultural practices during the early stages of Phase II. The constraints on funding further weakened the equipment maintenance program which was already poorly managed. A lesson to be learned is that preparation of Phase II projects and assurance of timely appraisal are key areas in which the Banks own performance could be improved.

3.04 The Project's staffing position was poor with key senior management positions remaining unfilled, some for periods of over one year. Most of the other key positions were occupied by expatriates whose contracts were about to expire. There was an immediate need to fill these vacancies early so as not to interrupt the ongoing activities of IPD, but it was difficult to fill these vacant posts and as a result staffing continued to be one of the major problems throughout the project. Both the Bank and IPD believed that the transformation of IPD into a fully commercial entity would resolve most of its staffing, financial and management problems but such a transformation did not take place till 4 years later.

Afforestation, Reafforestation and Maintenance

3.05 The project's annual target for new planting were 3,500 ha, of which 3000 ha were to be pine and about 500 ha eucalyptus. An additional 2,000 ha of clearfelled area was to be replanted with eucalyptus during the project period bringing the total to 19,500 ha. As part of afforestation, other activities, including land clearing, seedling production, planting, weeding, pruning and thinning were carried out by the project.

3.06 Land clearing - During appraisal, it was found that landclearing by IPD was done mainly through contractors, who were both expensive and unreliable. Provision was therefore made in the project that IPD would

(1) equip the landclearing unit so that it would take over all the landclearing operations (2) commence a trial charcoal production program to find a means of mitigating the cost of landclearing as well as furthering the development of improved charcoal production. Landclearing was slow but did not affect the planting program. IPD was able to equip it" second landclearing unit and operate independently of the contractors only by the fourth year of the project. The charcoal trials, which were provided in order to absorb the rising land clearing costs, were not carried out till the final year of the project, mainly owing to delays in selecting the right type of kiln followed by procurement problems. The cost per hectare for land-clearing which was estimated at the time of appraisal to be about K200 rose to K540 by 1982. Ironically, the equipment that the project owned by the end of the project period gave it a much greater capacity than it was going to need in Phase III, because the demand and utilization studies carried out had indicated only a modest planting program.

3.07 Seedling Production Program proceeded without major problems and it was able to supply all of the requirements of the planting program. Nursery costs however increased during the project from about K10 per thousand to K25 per thousand seedlings owing to increased labor costs.

3.08 Weeding - As a result of a shortage of equipment and spare parts before the project, the weeding program was in arrears from the start. The supervision missions had estimated that the overall progress during the early years averaged around 28% of the required weeding of newly planted areas. Early supervision missions repeatedly drew the attention of IPD to the potential for fire hazards resulting from the unsatisfactory weeding program. The then Director of IPD in his comments on the PCR agrees that there was a reduction in weeding intensity at the beginning of the project, but feels that the average weeding in the first two years was around 70%. He maintains that the areas which were subject to fire hazards were given special attention (Annex 1). By 1979 weeding was more or less on schedule although there was more mechanical and less manual weeding than estimated at appraisal. On balance, the weeding program had been carried out reasonably well.

Pruning and Thinning

3.09 Again owing to the prevailing budgetary constraints, both these operations were considerably behind schedule early in the project period. The backlog on pruning was cleared as the seasons progressed, but thinning continued to be behind schedule. Although lack of equipment had been one of the causes for slow progress in thinning, the lack of incentive to thin pine, especially the first thinnings, caused a further delay, particularly since a high percentage of the produce from the first thinning was unsaleable. The supervision mission of October 1981 recommended a revision in the thinning program when it discovered that the thinning based on volume per acre rather than on basal area was too high, making it doubtful that the final yields given in the appraisal could be achieved. The mission suggested that thinning intensity and frequency based on basal area would be preferable since the growth potential of a stand is easier to monitor with the basal area method. IPD agreed to these suggestions. The former IPD management have stated in their comments that it is now expected that

parts of the plantation will be managed for specific end uses, e.g., some of the unthinned areas may be turned into pulpwood areas and others that are younger be managed for sawnlogs.

Fire Protection

3.10 The project was expected to carry out the main fire protection measures, namely, controlled burning of firebreaks, building of 15m wide external firebreaks, maintaining of all firefighting vehicles, equipment and fire towers and manning the fire crews. These were not very well carried out and the Phase II project experienced a high incidence of fires (Table 5) owing to (a) irregular control burning which frequently got out of hand because of strong winds, dry weather and too much burning material on the ground, (b) inadequate maintenance of fire breaks, (c) inadequate equipment, (d) poor organization of fire prevention and firefighting. The appraisal mission estimated that 17,000 ha (half the average size of the plantation) would be subject to control burning annually, making a total of 85000 ha during the period of the Project. The actual area subject to control burning during this period was only 32,313 ha. Project management maintained that some areas did not require control burning because they were situated too far away from the settlement. Therefore, some judgement was made as to which were the priority areas. Ironically many of the fires were started owing to badly supervised controlled burning. These preventive measures were not very well understood by those involved in fire control. On those occasions when control burning had led to serious fires it was discovered that staff had not paid attention to the elementary steps that were needed to be taken in these exercises. The equipment and the crews had not been properly organized to meet such situations arising out of control burning. On the maintenance question, the shortage of equipment was one of the major reasons for the project's inability to carry out preventive measures, like grading of firebreaks and weeding. During the project period, the establishment and maintenance of firebreaks represented only about 20% of appraisal targets. Apart from the preventive aspects of fire protection, IPD's ability to deal with the suppression of fires was also weak. Inspite of the project providing financing for the firefighting equipment the delays in procurement turned out to be very costly for the project which had to face several fires without such equipment. During the project period there had been nearly 300 fires affecting about 6000 ha and completely destroying about 1300 ha with an estimated loss of about K0.5 million. Phase III has provided for measures to improve fire protection by establishing new external fire breaks, maintaining existing ones, constructing a fire tower and providing additional equipment. The lesson from Phase II is that in addition to providing the hardware and designing a program of fire protection and control, close monitoring of the preventive and maintenance program by top management should be made a priority and the Bank should take stronger action to ensure that forestry protection measures are enforced in a timely manner. The former IPD management in its comments had stated that in analysing the causes of fires they found that those arising out of control burning were few. However, steps have now been taken to deal with the major causes by instituting a disciplinary mechanism and holding the relavent staff more accountable for such occurences.

Logging and Transportation

3.11 The project did not propose any substantial modification of the IPD's existing logging methods but instead aimed at a reinforcement of its capacity through replacement of worn-out equipment and provision of additional equipment and labor to enable the logging section to handle 120,000 m^3 instead of the existing 60,000 m^3.

3.12 At the start of the project, all the lorries in the logging section were over five years old, many of them in need of constant repair, making the saw log supply to the mills erratic. The lorries obtained under Finnish aid during the second year of the project helped remedy this situation until the logging and transport equipment financed by the Project arrived. The project financed equipment was held up owing to procurement delays. The situation was compounded by weak management. Felling and logging were not properly coordinated and the log and lumber yards were poorly organized. Inadequate supervision and poor record keeping has worsened the problem in the logging section and prevented IPD from fully understanding the problem and finding a suitable solution. There were major discrepancies in the volumes felled and transported. The January 1982 mission stated that in 1980, according to IPD data, out of 133000 m3 felled only 87000 m^3 were logged to the next road and of these only 68000 m^3 were transported to the mills. Even with allowances for normal harvesting losses (15%) and the small diameter logs from thinning, left in the forest (20%) the volume transported to the mills was still around 75% of the net logged wood. Such discrepancies occurred during the entire project. No satisfactory explanation has been given by IPD management for these gaps. Training of the staff engaged in logging operations had not been carried out in a systematic manner, the training courses held at the Chati Workers Training Center, which were attended by IPD staff engaged in logging had not proved to be of much benefit. The daily productivity of those engaged in logging has decreased during the project period. The rate of extracted wood per machine per day had dropped from 20 m3(r) in 1975 to 12.2 m^3(r) by 1982 a decline of about 40% in productivity. The corresponding figures on productivity for a manday are7.5 m^3(r) in 1975 and 5 m^3(r) in 1982, which is an overall decline of about 30%.

3.13 The lesson to be derived from the experience of Phase II is that, since no plausible explanation could be offered by IPD on the logging discrepancies, the Bank should have taken a far more serious view of the lack of accountability. At the earliest opportunity during Phase III, the Bank should request the auditors to study and comment on this problems as a matter of urgency and recommend corrective action including a system of record keeping.for logging and transportation.

Disbursement

3.14 This project was disbursed from RMEA. The rate of disbursements were slow for the first year but from the latter half of the second year remained at about 90% of the estimated level (Table 4). At the very early stages, IPD staff were unfamiliar with both the procurement and disbursement procedures of the Bank, as a result, considerable time was spent in familiarizing them on the procedures and documentation necessary for procurement. This was provided during early missions by disbursement staff from RMEA. The arrangement of disbursing from RMEA proceeded reasonably

well, but due to the separate geographical location of project staff and disbursement staff communication on disbursement matters was problematic on occasions. In the case of the saw mill tender, an advance was paid to the supplier based on the telex sent to IPD by the Washington Office approving their recommendation to award the bid. This was not an approval of the contract but of the recommendation, and at this time the Bank had not received a copy of the final contract. The Loan Agreement Schedule 4(d) specified that before delivery to the Bank of the first withdrawal application two conformed copies of the contract should be furnished. Adherence to these requirements was not verified at the time the advance was paid. This payment however did not present a major problem but demonstrated the possibility of misunderstandings when staff work from two locations. On the whole disbursements were carried out well, and the present staff of ZAFFICO appear to be familiar with the Bank's procedures relating to disbursements.

Training

3.15 The main objective of the training component of the project was to train Zambians to replace expatriate staff who were on short-term contracts and holding positions in the accounting marketing, engineering, logging, sawmilling and marketing sections. During the appraisal of the project an assessment of the staffing requirement and the related training needs were broadly identified. However, Project financed training formed only a part of the total project related training the balance of the training being left to the sponsorship of the ongoing bilateral assistance. The amount provided under the project was US$130,000.

3.16 The other sponsors for training, besides the Bank and GRZ, were the British Overseas Technical Assistance and FINNIDA. Under British sponsorship one IPD candidate attended a course in Project Planning at the Bradford University, two candidates attended the Planning and Management course at the University of Oxford and two for the Higher National Diploma in Engineering and for the Agricultural Mechanics course in the UK. The Bradford and Oxford University course participants were already in managerial positions as acting Marketing Manager, and as Conservators. Under FINNIDA sponsorship, foresters were trained in sawmilling. The Government sponsored training was mainly carried out at the Chati Workers Training Center.

3.17 According to project staff, the candidates under training financed by project funds are as follows: one at the Oklahoma State University, two in the UK following a course for the diploma in Marketing, and six students who followed the BSc course in Forestry at the University of Dar es Salaam Facility of Agriculture and Forestry in Morogoro. IPD continued to have difficulties in carrying out training in the non forestry fields such as engineering, accountancy and technical skills. Firstly, being a part of the civil service, IPD was constrained by its rules to recruit candidates directly for overseas training in accountancy and engineering. Even when permission was obtained from the Government after lengthy procedures, IPD was unable to recruit suitable candidates. Secondly, on the job training for skilled work was overlooked in the design of the component. The project related training in Phase II was therefore constrained by both institutional and design drawbacks. Phase III examined this component critically.

3.18 Although the early supervision missions discovered shortcomings in the training program there is no evidence that the Bank took serious issue with IPD on the continuing poor staffing and training situation. Schedule 2 part H of the Loan Agreement specified that IPD carry out a training program satisfactory to the Bank. Although the funds were fully utilized under this component the program as carried out was not satisfactory as evidenced by the shortage of skilled personnel and the drop in productivity of the general labor force. In retrospect it appears that the Bank should have strongly urged that a proper assessment involving a systematic analysis of the skill gaps be carried out in the early years of the Project.

Cost

3.19 The actual project expenditures amounted to K34 million as against an appraisal estimate of K27.5 million. A significant overrun in the costs were recorded in the Plantation component, due to volume and price variations. Land clearing costs continued to rise during this period, the trial charcoal production program, which was intended to absorb some of the rising costs of land clearing, failed to yield any benefit owing to its delayed installation. The delay in installing the sawmill also resulted in having to incur higher than estimated costs. A further factor in the general rise in expenditure was the higher labor costs caused by a wage increase granted in 1981 for government employees.

Saw Mill

3.20 The project included the construction and operation of a saw mill designed to produce 20000 m3 of sawnwood annually on a single or 40000 m^3 on a double shift basis. The sawmill was installed only in the fourth year of the project, instead of the first year as proposed during appraisal, due to procurement delays. The site for the sawmill was changed from Chati to Kalibu, the future location of a pulp and board mill. After its installation it became apparent that the saw mill package, as included in the project, did not adequately provide for all of its needed handling facilities, its complete electricity and water supply requirements, timber sorting and chipping sheds, fuel conveyor systems and waste disposal slabs and office buildings. It is now thought to be impossible to achieve the target production of 20000 m3 without rectifying these deficiencies. These have now been included in the financing of Phase III at a cost of about KO.6 million.

Accounting Auditing and Progress Reporting

3.21 The Project had a consistently good record of producing timely financial statements and submitting audited accounts. Progress reporting too was generally satisfactory. The reporting format was changed once by the January 82 supervision mission to enlarge the scope of the report, IPD responded well to the format and continued its timely reporting.

3.22 The accounting systems are satisfactory in design and maintenance, with some exceptions noted by the auditors. These related to stock control, timber work in progress, and strengthening of internal control. The recommendations made by the auditors on the above matters were accepted by management. The accounts section functioned without a Financial

Controller for over a year until the projects senior accountant was appointed to the post. Considering the expanding nature of the business, some improvements to the system so as to enable IPD to produce integrated financial and cost data would have been beneficial to both management and staff. Although the project had the services of a qualified cost accountant, only ad hoc cost data were produced these were mainly on stumpage and sawn timber production. The support staff situation in the accounts department remained poor with regular absenteeism and general lack of motivation. Owing to these reasons, the senior accounting staff were rarely able to devote time to any form of systems work other than the production of routine financial information. The Cost Accountant usually doubled as the paymaster for the Dola Hills mill and office, a pitiful waste of resources. Both he and the Senior Accountant frequently had to check the work of juniors in addition to their regular functions. With these constraints, it was creditable that the accounts were produced on time.

Procurement

3.23 On balance IPD's procurement experience during the project period was satisfactory. Where delays were experienced they were due to IPD's unfamiliarity with Bank's guidelines on procurement. The very first ICB tender specifications submitted for approval by the Bank were too specific and were thought to limit international competitiveness, with the Bank's advice, IPD revised the specifications before the tender. In the subsequent tenders, except for general delays, the Bank's refusal to either approve contracts or payments were limited to only a few instances. Once, the Bank had to advise IPD to reconsider a decision recommending a supplier who was not the cheapest, although IPD maintained that standardization was the reason for the recommendation, the Bank was unable to accept it. In their comments on the PCR the former management of IPD states that procuring from the cheapest source on the insistence of the Bank turned out to be unreliable and the equipment was more expensive to maintain. On another instance the Bank refused to disburse against the claim for freight costs because that portion of the shipment was carried in a non-member flag carrier.

IV. Financial and Economic Re-evaluation

4.01 At appraisal, a financial rate of return (FRR) and an economic rate of return (ERR) were calculated for the Basic Project Model and a single saw mill model. The assumption for the Basic model were that the cost stream would include: the project sawmill, the cost of increasing the logging capacity to 120,000 m3, cost of wood produced under the Phase I project which are ready to be logged and processed, Phase II plantation costs and cost of logging and sawmilling of the Phase II wood including the provision of additional capacity. The returns had been calculated for both with and without the cost of the Pulp and paper mill.

4.02 For comparability, the present analysis makes the same assumptions except that the Pulp and Paper Mill was excluded because the proposal for the mill had not materialized and therefore no up-to-date information is available for it. As compared with the appraisal FRR of 11% (without

the pulp and paper mill) the present estimate is 8%. This was primarily due to higher than estimated cost of project, the adverse effects on the Project of the country's generally poor economic conditions and the delayed start of the saw mill with the consequent loss of revenue. These factors were not offset by the higher prices which IPD charged.

4.03 The assumptions for the Single Sawmill Model were as follows: an effective life of 15 years for the sawmill, wood planted prior to Phase I charged at import parity cost. At appraisal, a financial rate of return of 11% was estimated on a two shift basis. The present estimate is 9%. The lower estimate is due to the higher than estimated cost for the sawmill (Para. 3.20) which was not offset by the increased prices charged by IPD for its product. A further factor is the non-feasibility of running two shifts, contrary to the expectation at appraisal. To maintain a two shift operation a strict program of equipment maintenance and a highly organized logging and transport system are required, a two shift operation carriedout badly could increase the unit cost of production significantly.

4.04 At appraisal, the following assumptions had been made for the economic analysis (a) shadow wage rate for local unskilled labor at 60% of actual; (b) the project's imported inputs valued at 12% higher than the official rate of exchange; (c) sawnwood prices to reflect border prices. On similar assumptions the project is now expected to have an ERR of 15% compared to the 20% at appraisal. Using the recommended conversion factors and by applying the recommended shadow wage rate the estimated ERR still remains close to 15%.

V. INSTITUTIONAL PERFORMANCE AND DEVELOPMENT

5.01 As a condition of further involvement with Zambia's industrial forestry program, the Bank insisted that the Government follow a coordinated approach to forestry and forest industries matters. A framework for such an approach was laid when the Government decided to make MLNR responsible for all activities in forestry and forest indistries with the exception of the pulp and paper mill which was to remain with INDECO. However, further institutional shifts that the Bank would have liked to see adopted during the Phase II did not materialize. The major institutional drawback of IPD was its continuing status as a division of the FD despite an agreement that it would be incorporated into a commercial company in the first year of the project. The incorporation did not take place till three years later. The delay affected many aspects of the project adversely some more than others, these are staffing, training and general management.

5.02 All of IPD's shortcomings regarding staffing matters could not be attributed wholly to the incorporation issue since there were inherent deficiencies in the structure of staffing which even a timely incorporation would not have remedied. For instance at appraisal five out of the seven key managerial positions were occupied by expatriates funded under bilateral aid. These arrangements are not always favorable to the recipients since the determination of how, when and who are to fill such posts are generally dependent on the respective aid programs. There were at least two ways in which IPD was adversely affected; firstly, there were long periods when it could not obtain quick replacements for the expatriate

staff terminating their contracts and secondly certain staff that IPD received were not of the highest caliber. Regardless of its corporate status at the time, IPD should have, pursued an aggressive policy in having the positions filled through the intervention of government. To some extent the issue appears to be one of poor management rather than that of a change in the coporate status. However, in the case of recruitment of key staff locally IPD was constrained by the civil service rules to which it was subjected to in the absence of the incorporation. A case in point was the appointment of a marketing manager by the Public Service Commission without consultation with IPD. The candidate was found unsuitable and later had to be removed. In training too IPD continued to have difficulties owing to institutional and design shortcomings (para. 3.17).

5.03 During Phase II IPD management was under continuous stress, it functioned as a weak centralized management system with even weaker peripheral support. Since several of its key operating divisions of engineering, production and marketing were not fully staffed, there could be no proper delegation of responsibility to the operating divisions.

5.04 IPD management's poor performance was also evident from the decline in labor productivity and machine utilization during the project. No consideration had been given to long range planning or manpower development planning during appraisal nor were these suggested during the early supervisions. On-the-job training was briefly discussed during SAR preparation but was not formulated into a monitorable program in the SAR or during subsequent supervisions. During the later supervisions when these shortcomings became obvious it was decided that they would be dealt with in the Phase III design (para. 1.10).

VI. CONCLUSIONS

6.01 The project in overall terms had been implemented satisfactorily, the plantation component for which over 80% of the financing was provided exceeded its physical targets. One of the main considerations for the Bank to continue to be involved with the government's long-term forest and forest industries program was the need to ensure that there existed a coordinated approach in Zambia in the development of her forest industries. This focus was achieved during the preparatory stage of this project when MLNR was made responsible for all activities connected with industrial forestry with the exception of the pulp and paper mill. There were other institutional developments within the project which the Bank would have liked to see occur, mainly the change in the status of IPD, but these changes did not take place as expected. However the implementation experience of the Phase II project offers some useful lessons mainly in the areas of appraisal planning, cofinancing arrangements, project costing, management information and supervision, these could be beneficial to both the Bank and ZAFFICO in the implementation of the Phase III project.

6.02 The negative impact of the time gap between the two phases adversely affected the continuing operations of Phase I as well as the early performance of Phase II. The lesson to be learned is that preparation of follow up projects and assurance of timely appraisal are key areas in which the Banks own performance could be improve.

6.03 The project was cofinanced with CDC, but at the time of appraisal CDC had only agreed in principle to finance 18% of the cost of the project. Little else is mentioned about CDC's participation during the supervision stage although a CDC staff member accompanied the Bank's supervision mission on two occasions. Financing being crucial to the capital needs of an enterprise such as the IPD, sources of financing should not have been left tentative. The point that can be gleaned from this experience is that the financing plan has to be formulated in the clearest possible terms. There should also be much closer cooperation and the sharing of information between the cofinanciers on a continuing basis.

6.04 A prerequisite for a firm financing plan, particularly for an ongoing project, would be the existence of a properly costed and quantified program which takes into account all the activities of the project entity. The project is usually identified within this overall program. If this approach had been adopted in Phase II, it would not only have provided the opportunity to systematically assess the financial needs of every operation of the enterprise but in the process would have given sufficient focus to the staffing, training, and management requirements of IPD.

6.05 IPD management did not appear to have been sensitive to the productivity of its equipment and labor (para. 3.12), it failed to monitor the effectivenees of these resources, keep the equipment in good repair and see that the productivity of labor is not allowed to decline. The project had failed to maintain an effective management information system (MIS) which would monitor and measure among other matters labor and machine productivity. Phase III on the other hand has included provision for improving the management information system in ZAFFICO.

6.07 On average, Phase II supervisions have been carried out every eight months, the space between the earlier missions were even longer. More frequent supervisions, particularly during the early period of the project, should have been carried out. Many of the technical aspects of forestry had been well covered during these supervisions, however, in the case of fire protection stronger Bank action should have been taken to ensure that the fire protection measures were enforced in a timely manner. Institutional and financial management matters of the project on the other hand received less attention until the later missions. Progress reporting was generally well done although a system of MIS would have served both the IPD management's decision making and Bank's monitoring of key performance indicators well.

6.08 The key to the success of a modern timber industry is the presence of qualified management in positions of authority. Other than the expatriate staff of IPD (now its successor ZAFFICO) almost all of the staff are civil servants with little experience in private sector operations. Their tendency would be to manage the organization as a department of the government, even with a change in the corporate status of the enterprise this situation would present a continuing problem unless a marked reorientation of the top management is achieved. The third phase has already provided ZAFFICO with systems enhancements and corporate planning capability to be used as tools for efficient management, these enhancements are not without costs and will have to be recovered from increased revenue, the efficacy of such improved techniques finally depend on how best they

are used by management. These aspects have to be carefully monitored during the early stages of the Phase III project not only to see that the systems are in place but more importantly to see that they produce the desired results.

Table 1

ZAMBIA

INDUSTRIAL FORESTRY PLANTATION PROJECT II

Project Completion Report

Achievement of Physical Targets

Operations	SAR Target: Whole Project 5 Years	SAR Target: Average	Actual: Year 1 1978/79	Year 2 1979/80	Year 3 1980/81	Year 4 1981/82	Year 5 1982/83	Total Yr 1-5
1. New Planted Area (Ha)								
(a) Pine	15,000	3,000	3,061	3,069	3,578	4,615	2,289	16,612
(b) Eucalyptus	2,500	500	495	693	594	181	1,204	3,167
Total	17,500	3,500	3,556	3,753	4,172	4,796	3,493	19,779
2. Replanting (Ha)	2,000	400	256	--	--	211	299	766
3. Road Construction (Km)								
(a) Access Roads	175	35	31	15	22	47	15	130
(b) Logging Roads	52	10	--	--	--	61	14	75
(c) Compartment Roads	542	114	15	20	21	--	--	--
(d) Fire Protection Roads	281	56	--	--	--	--	--	--
4. Road Maintenance (Km) 1/								
(a) Firebreak Roads	2,737	547	--	--	--	+98	440	538
(b) Access Roads	595	119	--	--	--	--	--	--
(c) Logging Roads	402	80	--	--	--	--	--	--
(d) Compartment Roads	1,295	259	--	--	--	--	33	33
5. Harvesting and Logging (000 m^3)								
(a) Felling (including thinning)	600	120	83	130	133	111	172	630
(b) Extraction	600	120	77	96	110	79	71	433
(c) Transportation	600	120	70	79	97	89	62	397
6. Housing (Unit)								
(a) Low Density	12	2/3	1	--	--	3	1	5
(b) Medium Density	15	3	2	2	4	--	--	8
(c) High Density	350	70	9	68	139	30	28	191
(d) Ablution Blocks	39	6/7	2	--	--	--	--	2

1/ Records for these activities have been poorly maintained, where data are available firebreaks and compartment roads have been mixed up.

Table 2

ZAMBIA

INDUSTRIAL FORESTRY PLANTATIONS II (Loan 1424-ZA)

Project Completion Report

Fire Occurrences and Damage 1978-1982

Year	Number of Fires	Total Area Affected	Area Killed	Loss in Value
1978	54	707	132	50,151
1979	68	1,459	294	125,209
1980	59	782	280	101,121
1981	51	1,254	155	97,855
1982	55	2,051	460	125,832
Total	287	6,244	1,331	500,168

Table 3

ZAMBIA

Industrial Forestry Project Phase II (Ln 1424-ZA)

Project Completion Report

(A) Project's Actual Cost

	Local	Foreign	Total	Local	Foreign	Total
	K '000			US$ '000		
Plantation	18,595	11,304	29,899	22,128	13,452	35,580
Logging & Transport	586	539	1,125	697	641	1,338
Sawmilling	1,274	1,575	2,849	1,516	1,874	3,390
Staff Training	19	125	144	23	149	172
Studies Trials	—	24	24	—	29	29
Total	20,474	13,567	34,041	24,364	16,145	40,509

(B) Cost Estimates at Appraisal

	Local	Foreign	Total	Local	Foreign	Total
	K '000			US$ '000		
Plantation	8,600	6,300	14,900	10,700	7,900	18,600
Logging & Transport	100	1,100	1,200	100	1,400	1,500
Sawmilling	700	1,500	2,200	900	2,000	2,900
Staff Training	20	80	100	30	100	130
Studies, Trials	200	100	300	270	100	370
Physical Contingencies	1,000	900	1,900	1,200	1,200	2,400
Price Contingencies	3,600	3,300	6,900	4,500	4,100	8,600
Total	14,220	13,280	27,500	17,700	16,800	34,500

Table 4

ZAMBIA

INDUSTRIAL FORESTRY PLANTATIONS II (Loan 1424-ZA)

Project Completion Report

Schedule of Disbursements
(US$ '000)

FY	Appraisal Estimate Quarter	Appraisal Estimate Cumulative	Actual Quarter	Actual Cumulative	Actual As % of Estimate
1978/79					
September	1,134	1,134	781	781	68
December	1,134	2,268	71	852	38
March	1,144	3,412	284	1,136	33
June	1,145	4,557	340	1,476	32
1979/80					
September	598	5,155	6	1,482	29
December	599	5,754	2,572	4,054	70
March	598	6,352	1,463	5,517	87
June	599	6,951	974	6,491	93
1980/81					
September	756	7,707	526	7,017	91
December	756	8,463	1,267	8,284	98
March	766	9,229	985	9,269	100
June	767	9,996	831	10,100	101
1981/82					
September	766	10,762	95	10,195	95
December	767	11,529	330	10,525	91
March	766	12,295	752	11,277	92
June	767	13,062	2,094	13,371	102
1982/83					
September	934	13,996	470	13,841	99
December	935	14,931	563	14,404	96
March	934	15,865	—	14,404	91
June	935	16,800	497	14,901	89
1983/84					
September	—	—	913	15,814	94
December	—	—	242	16,056	94
March	—	—	667	16,723	99

Table 5

ZAMBIA

Industrial Forestry Project Phase II (Ln 1424-ZA)

Project Completion Report

Project's Financial Rate of Return of Project
(K '000)

Year	Cost	Benefit	Net Benefit
1	5,724	300	-5,424
2	7,637	570	-7,067
3	10,213	1,110	-9,103
4	9,610	870	-8,740
5	6,809	60	-6,749
6	1,110	300	-800
7	1,552	1,768	216
8	2,088	2,652	564
9	3,480	4,420	940
10	4,980	4,420	560
11	6,710	12,943	6,233
12	12,730	16,334	3,604
13	11,347	19,099	7,752
14	22,068	32,678	10,610
15	14,905	23,420	8,515
16	16,545	25,897	9,252
17	13,490	21,554	8,064
18	6,691	12,918	6,227
19	7,456	13,890	6,434
20	7,476	13,915	6,439
21	5,236	15,490	10,254
22	11,242	14,278	3,036
23	5,726	7,082	1,356
24	2,500	3,366	866
25	32,743	41,854	9,111
26	32,319	41,278	8,958
27	35,094	44,643	9,549
28	50,171	64,186	14,015
29	21,865	27,772	5,907

FRR = 8%

Table 6

ZAMBIA

Industrial Forestry Project Phase II (Ln 1424-ZA)

Project Completion Report

Project's Economic Rate of Return

Year	Cost	Benefit	Net Benefit
1	5,037	360	-4,677
2	6,721	684	-6,037
3	8,987	1,332	-7,655
4	8,457	1,044	-7,413
5	5,991	72	-5,919
6	968	360	-608
7	1,366	2,121	755
8	1,837	3,182	1,345
9	3,062	5,304	2,242
10	4,142	5,304	1,162
11	5,905	15,532	9,627
12	11,203	19,601	8,398
13	9,985	22,919	12,933
14	19,420	39,213	19,793
15	13,116	28,104	14,988
16	14,559	31,077	16,517
17	11,871	25,865	13,994
18	5,888	15,502	9,614
19	6,562	16,669	10,107
20	6,579	16,698	10,119
21	4,608	18,588	13,980
22	9,893	17,134	7,241
23	5,039	8,498	3,459
24	2,200	4,039	1,839
25	28,814	50,225	21,411
26	28,441	49,533	21,902
27	30,882	53,571	22,689
28	44,150	77,024	32,873
29	19,242	33,326	14,084

ERR = 15%

Table 7

ZAMBIA

Industrial Forestry Project Phase II (Ln 1424-ZA)

Project Completion Report

Financial Rate of Return for Single Saw Mill
(K, million)

Year	Cost	Benefit 2/	Net Benefit
-1	2.90	--	(2.90)
2	2.12 1/	1.62	(0.50)
3	2.15	2.42	0.27
4	3.58	4.04	0.46
5	3.58	4.04	0.46
6	3.58	4.04	0.46
7	3.58	4.04	0.46
8	3.58	4.04	0.46
9	3.58	4.04	0.46
10	3.58	4.04	0.46
11	3.58	4.04	0.46
12	3.58	4.04	0.46
13	3.58	4.04	0.46
14	3.58	4.04	0.46
15	3.58	4.04	0.46
16	3.58	4.54	0.96

FRR = 9%

1/ Includes required rehabilitation K0.6 million to reach capacity
2/ Single shift operation of 20,000 m^3 per year.

Table 8

ZAMBIA

Industrial Forestry Project Phase II (Ln 1424-ZA)

Project Completion Report

Adjusted Project Costs at 1982 Prices

ZK '000

	Total Project Cost	Foreign Cost	Foreign[1/] Infla. Factor	Adjusted 1982 For. Cost	Local Cost	Local Infla. Factor	Adjusted 1982 Loc. Cost	Adjusted 1982 Total Cost
1978	3,569	1,719	1.35	2,320	1850	1.84	3,404	5,724
1979	5,254	2,511	1.13	2,837	2,743	1.75	4,800	7,637
1980	8,427	4,168	1.03	4,293	4,259	1.39	5,920	10,213
1981	10,356	2,081	-1.07	1,935	8,275	1.29	10,675	12,610
1982	6,435	3,088	-1.02	3,027	3,347	1.12	3,782	6,809
Total	34,041	13,567		14,412	20,474		28,581	42,993

1/ Obtained from Unit Value Index of Manufactured Exports

ZAMBIA FORESTRY AND FOREST INDUSTRIES CORPORATION LIMITED

HEAD OFFICE
P.O. BOX 71588 NDOLA PHONE 3224/5 4649 TELEX ZA30000

Your Ref. .....
Our Ref. I.41C/499

4th June, 1985

Mr. Y. Watanabe,
Director,
Operations Evaluation Department,
The World Bank,
1818 H Street, N.W.,
Washington DC 20433,
U.S.A.

Dear Sir,

Industrial Forestry Project Phase II (Loan 1424-ZA)

Project Completion Report (Draft)

Thank you for your letter of 16th April, 1985 in which you enclose the Draft Completion Report for our comments.

The report is a fair reflection of what happened and the successes and failures of Phase II project are clearly highlighted. The project on the whole as indicated was a success.

The main cause of the design short coming highlighted in the summary is that there was no project preparation for phase II and the economic realities of the country were not taken into account. Governments contribution to the project was taken for granted as in Phase I without due consideration to Governments own ability to support the project from its normal budget. This support was not as forthcoming as in the Phase I Project.

Industrial Plantations operations were fragmented, and this created problems not only for the supervision missions but also for project staff. The other problem was the lack of co-ordination among the financing institutions i.e. CDC and IBRD.

2/...

III IMPLEMENTATION

3.02. The agreement with Government specifically provided for adequate budgetory allocation to be made annually from 1978 to 1982. There was no mechanism of ensuring this was done. As a result only for two years did the project have adequate funding.

3.08. Weeding The reduction in weeding intensity at the beginning of the Project was a result of shortage of equipment and late land preparation which resulted in the planted areas being cleaner than expected. The fire hazard aspects was known and in those areas that required special attention this was given. The average weeding in the 1st two years is around 70%. Thelowest is year 4 with about 50%.

3.09. Pruning and Thinning

The non-availability of a market for the small wood from 1st thinnings made management delay the thinnings in the hope that a market will be available by 1981/82. This did not happen and now the backlog is a lot more than anticipated. It is now expected that parts of the Plantation will be managed for specific end-uses. Thus some of the older unthinned areas may be turned into pulpwood areas and others that are younger and can be thinned will be managed for sawlog output.

3.10. Fire Protection

The fire protection methods that were adopted were adequate if all the necessary equipment had been available. There were inadequate firefighting vehicles, the communication system was poor although a new system was designed it could not be totally installed because of funding problems. The high incidence of fires can only be appreciated if the causes of these fires are looked at. Of the 297 fires reported during the fire years 175 of them or 59% are attributed to incendiarism, hunters, and thieves accounted for 56 or 19%. Own workers caused 25 fires or 8%. Ideallythere should be no reason why our own workers should start these fires. The fires started by our workers fall into two categories as follows

3/...

a) Fires started as a result of cooking fires left unattended after lunch in the field. These constitute the majority and do very little damage because of the early attack on them.

b) Fires resulting from poor control of boundery or early burning. During the period there were three of these fires. So it is not true to say many of the were started owing to badly supervised controlled burning.

The disciplinery mechanism for dealing with the situation was not available. This has now been rectified and there is a lot more accountability on the part of the fire officers and the plantation superintendents. Although adequate financing for fire-fighting was provided under the project, there was disagreement between the Bank and Project Management on the type of equipment to be procured. By the time there was agreement some of the equipment procured did not stand up to expectation. It is only hoped that both the Bank and the project management have learnt some lesson from this. The main remedial measure is to have adequate equipment available when required.

Logging and Transport

3.12. The record keeping in the logging section has been improved. It would appear the Bank mission did not listen to the practical field explanation on the differences between the volume felled extracted and transported. The volume felled shows the total tree volume. At extraction there is an automatic loss of volume through loss of tops and because extraction is normally behind the volume extracted will be lower and there will still be some wood in the forest awaiting extraction. The same goes for transport. There is no physical loss in volume other than by way of tops. The differences in volumes is due to different capacities for each of the operations.

The drop in output in machinery is reflection of poor availability of the equipment which was also due to Poor maintenance. Although the Operators and Workers had gone through the Workers' Training Centre, there was no follow up to see that the Workers performed their work properly as per instruction. This is now

4/...

being corrected by the recruitment of a Training Specialist.

Training

Having been part of the Forest Department all the training were handled by the Department. However it was realized by the project management that this was not satisfactory and the organization took on all training not directly related to Forestry. As far back as the Phase I period the organization made a start at sponsoring students to take up automotive, mechanical and electrical engineering at the Northern Technical College. Because of poor salaries on completion the students even though bonded left for greener pastures who were prepared to reimburse IPD the expense on each of the people concerned.

The financing of training through loan funds was not favourably looked upon by Government at the beginning of the Phase II project hence the meagre allocation. This position has since changed.

Accounting

3.22. The level and calibre of supporting staff in the accounts office remained poor for the project period but we are not aware of the regular absenteeism being referred to.

Procurement

3.23. The refusal by the Bank to accept managements reasons for choosing a supplier who was not the cheapest led not only to delays in procurement but when the equipment that was cheapest was bought it turned out to be unreliable and more expensive to maintain. From this the lesson to be learnt is that the procurement of equipment should not be based on price as the major factor as the Bank had insisted.

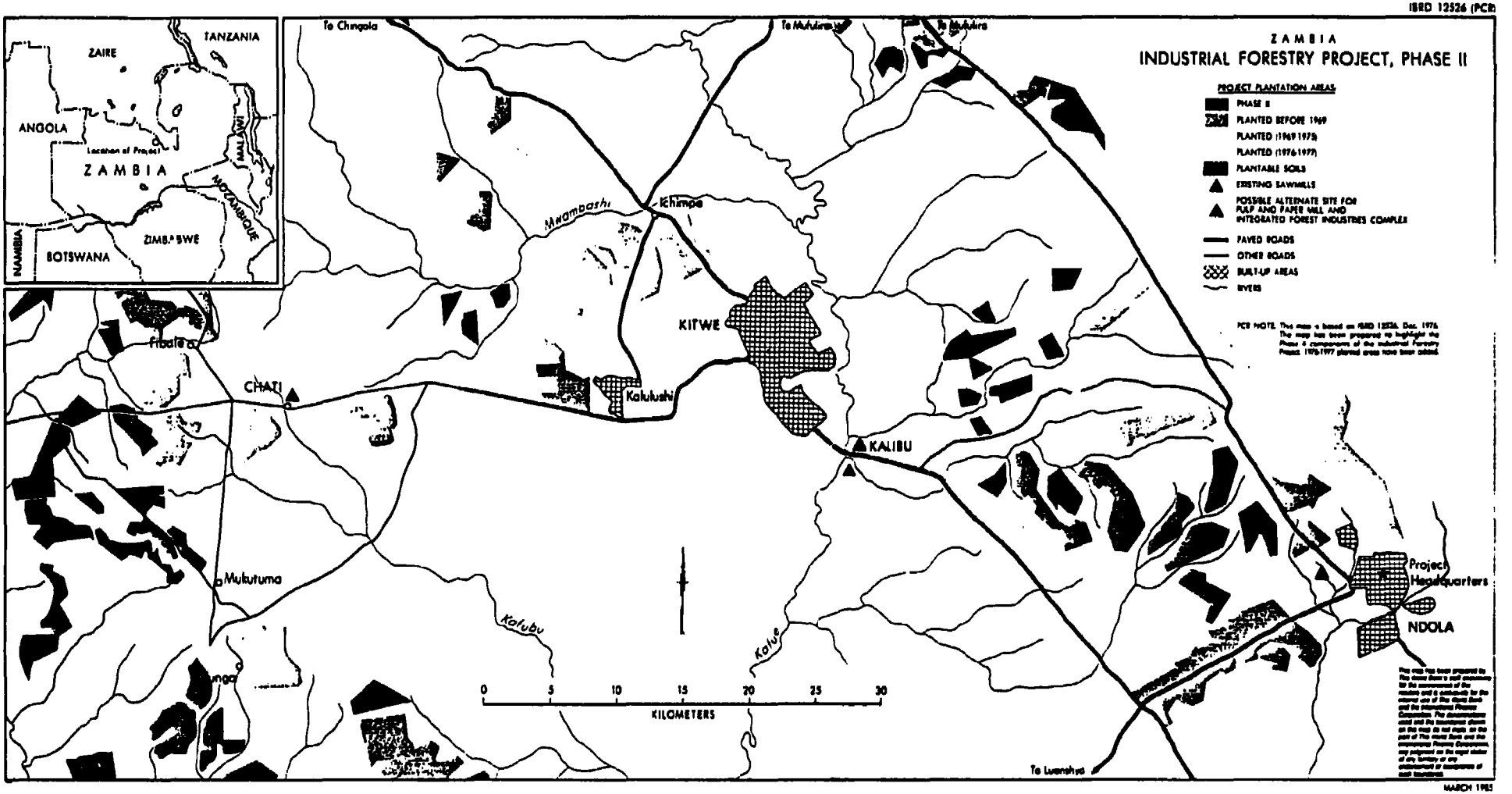
We hope the above comments will be of some assistance in the preparation of the final report.

Yours sincerely,
ZAFFICO LIMITED.,

F. B. Nduna
Managing Director

FBN:jcn.

IBRD 12526 (PCR)



MARCH 1985