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Report No. 10507

PROJECT COMPLETION REPORT

TANZANIA

**SAO HILL FORESTRY PROJECT - PHASE II
(CREDIT 1229-TA)**

MARCH 31, 1992

Agriculture Operations Division
South Africa Department
Africa Regional Office

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CURRENCY EQUIVALENTS

Currency unit	:	Tanzania Shilling (Tsh)
Exchange Rate at Appraisal :	US\$ 1.00	= Tsh 8.25
Exchange Rate at Completion:	US\$ 1.00	= Tsh 200.00

FISCAL YEAR

Government of Tanzania	:	1 July to 30 June
World Bank	:	1 July to 30 June

ABBREVIATIONS

FAO	Food and Agriculture Organization
FAO/CP	FAO/World Bank Cooperative Programme
FBD	Forestry and Beekeeping Division
GOT	Government of Tanzania
PCR	Project Completion Report
SHS	Sao Hill Sawmill
SPM	Southern Paper Mills

Office of Director-General
Operations Evaluation

March 31, 1992

MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT

SUBJECT: Project Completion Report on TANZANIA
Sao Hill Forestry Project - Phase II (Credit 1229-TA)

Attached, for information, is a copy of a report entitled "Project Completion Report on Tanzania - Sao Hill Forestry Project - Phase II (Credit 1229-TA)" prepared by the Africa Regional Office with Part II of the report contributed by the Borrower. This project has not been audited by the Operations Evaluation Department at this time.

Attachment

A handwritten signature in black ink, appearing to be 'J. P. ...', is written over the text 'Attachment'.

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PROJECT COMPLETION REPORT

TANZANIA

SAO HILL FORESTRY PROJECT, PHASE II

(CREDIT 1229-TA)

PREFACE

This is the Project Completion Report (PCR) for the Sao Hill Forestry Project, Phase II, for which Credit 1229-TA (US\$ 12.0 million) was approved on April 13, 1982. The Credit became effective on March 16, 1983. The Credit closing date was extended three times from December 31, 1987 to December 31, 1990.

The PCR was jointly prepared by the Food and Agriculture Organization/World Bank Cooperative Program, FAO/CP, (Preface, Evaluation Summary, Parts I and III) and the Borrower (Part II).

Preparation of this PCR was started during FAO/CP's field visit to the project in September 1990. The report is based inter-alia on the findings of the FAO/CP mission during its field visit, and the information gathered from the Staff Appraisal Report, the Credit Agreement, supervision reports, correspondence between the Bank and the Borrower, and internal Bank memoranda.

PROJECT COMPLETION REPORTTANZANIASAO HILL FORESTRY PROJECT - PHASE II

(Credit 1229-TA)

EVALUATION SUMMARYObjectives

1. The primary objective of the Sao Hill Forestry Project, Phase II was to increase the supply of wood for industrial purposes by establishing new plantations, maintaining the plantations established under Phase I, and developing infrastructure and forestry services within the plantations. The project sought to consolidate and strengthen the project implementation and management capacity established under Phase I. Major project components included: the maintenance of about 18,000 ha of Phase I plantations, establishment of about 10,000 ha of new plantations and the construction of forest roads, tracks, fire breaks, fire towers and other buildings. The plantations were established mainly to provide supplies to the Southern Paper Mills (SPM) which was commissioned in 1985 and is currently the largest mill in the country with a capacity of 60,000 tons of finished paper. The project was to be executed by the Forestry and Beekeeping Division (FBD) with the assistance of three long-term consultants.

Implementation Experience

2. The country faced many economic difficulties during the implementation period and the consequent shortages of Government funds caused serious delays in implementation. For most of the project years, less than half of the funds requested were approved. Under these circumstances, project management decided to speed up the afforestation program at the expense of silvicultural practices and infrastructure development. This decision was also prompted by the fire in September 1983 that destroyed about 5,000 ha of plantations established under Phase I. The fires were not fought effectively due to lack of suitable fire fighting equipment. Smooth implementation of the project was also hampered by the unsatisfactory performance of the consultants and the strained relationship between the consultants and project management. During the early stages of implementation, the project was plagued with serious problems of management, lack of funds, delayed procurement of equipment and machinery, a poor relationship between consultants and management, and deteriorating staff morale. In 1984/1985, the problems became so serious that the Bank's supervision missions recommended that the Government transfer the management of the plantations to other institutions. This recommendation was not implemented.

3. Project performance improved markedly from 1986 onwards, mainly due to staff dedication and project management's efforts to respond to staff needs and to provide some non-monetary incentives. Staff morale was also raised by the establishment of new plantations following project management's decision to give priority to afforestation. The change in performance induced the Bank to extend the credit closing date by three years, thus enabling the project to achieve some of its non-afforestation components and to exceed its afforestation targets. At completion, project costs amounted to about Tsh 432.6 million (US\$ 9.9 million) against the appraisal estimate of Tsh 123.6 million (US\$ 15.0 million).

Results

4. The main objective of establishing resources necessary to supply the emerging wood-based industry has been achieved by the project. The planting and replanting targets of pine and eucalyptus have been exceeded: 22,500 ha against 10,760 ha envisaged at appraisal. The achievements in silvicultural activities were, however, below target. The plantations are of good quality and are expected to produce high quality timber and paper products. As a result of the quality of the plantations and the increase in stumpage fees, the financial rate of return is 18%, which is higher than what was anticipated at appraisal. The economic rate of return is also higher than what was calculated at appraisal: 33% against 30%.

5. The project has had a positive impact on the forestry sub-sector by enabling the country to be self-sufficient in industrial wood. The project has also had a positive impact on the environment in general as the availability of the plantation wood will reduce the pressure on the natural forests. In the project area, the project's environmental impact, particularly in the reduction of wind movement and the return of wildlife, is widely acknowledged.

Sustainability

6. The project can provide a sustainable supply of high quality raw material to the wood-based industry. The project management and staff are capable of managing this resource. The sustainability of production will greatly depend on continued government support, availability of funds for operation, maintenance and replacement of equipment, the retention of high quality staff, and careful protection of the resource. It would be difficult to achieve the above if the project were to be managed under a normal Government department subject to lengthy bureaucratic procedures. A management system with an autonomous body and an assured source of finance is vital for the long-term sustainability of the project.

Findings and Lessons Learned

7. The main lessons to be learned from the project are:

- care needs to be taken to ensure that an item designated to become a condition of project effectiveness is, in fact, of such importance that project implementation cannot commence without it;
- selection and recruitment of consultants should not be rushed even if project start-up is delayed;
- where the provision of monetary incentives to project staff (working in remote areas) is not possible, the provision of other non-monetary incentives may be equally appreciated and contribute to staff morale and continuity;
- careful assessment of Government capability to allocate sufficient funding is necessary during project appraisal;
- staff continuity is an essential ingredient to successful project implementation;
- the management of industrial plantations, such as Sao Hill, cannot be successfully carried out under normal Government bureaucracy; and
- projects of this nature should work in harmony with the local authorities and population. Linkages should be established from the onset.

PROJECT COMPLETION REPORT

TANZANIA

SAO HILL FORESTRY PROJECT, PHASE II (Credit 1229-TA)

PART I. PROJECT REVIEW FROM BANK'S PERSPECTIVE

1. Project Identity

Project Name : Sao Hill Forestry Project, Phase II
Credit No. : 1229-TA
RVP Unit : AF6AG
Country : Tanzania
Sector : Agriculture
Sub-sector : Forestry

2. Background

2.1 One of the Government of Tanzania's long-term objectives in the forestry sub-sector has been to develop its forest resources to meet the country's needs for wood and wood products and to earn foreign exchange through exports. To this end, Tanzania explored the possibility of establishing large-scale industrial plantations for both pulp and timber production. A number of studies carried out in the mid-1960s and observations of existing plantations indicated the feasibility of establishing successful industrial plantations of pine and eucalyptus at Sao Hill.

2.2 Based on these findings, the Government of Tanzania (GOT) requested World Bank assistance in establishing plantations. Hence the Sao Hill Forestry Project (Loan 1307-TA) was initiated in 1976 with World Bank support. This project, which was considered the first phase of a long-term industrial forest development program, was completed in 1982 after successfully establishing about 17,800 ha of plantations, besides undertaking maintenance of existing plantations and extending/maintaining roads. During this period, the Government obtained assistance from several donors (including the World Bank) to establish a pulp and paper mill. The mill, Southern Paper Mills (SPM), with a capacity of 60,000 tons of finished paper, was commissioned in 1985. The SPM is located close to the Sao Hill plantations and is the largest mill in the country, currently operating for the domestic and foreign markets. The Government also established within the plantations the Sao Hill Sawmill (SHS) which is now producing timber from mature plantations.

2.3 In pursuance of its long-term development policy in the forestry sub-sector, and given the planned development of the wood-based industry in the area, it was considered necessary to expand the plantations to ensure a sustainable supply of logs. The Sao Hill Forestry Project, Phase II, was therefore initiated in 1982 with the assistance of the World Bank. The project was identified and prepared by the CP in 1980 and appraised by the Bank in 1981.

3. Project Objectives and Description

3.1 The main objective of the Sao Hill Forestry Project, Phase II was to increase the supply of industrial wood by establishing new plantations, maintaining the plantations developed under Phase I, and developing infrastructure and forestry services within the plantations. In addition, it proposed to consolidate and strengthen the project implementation and management capacity established under Phase I.

3.2 Specific project components consisted of the following:

- (a) The maintenance of about 18,000 ha of Phase I forest plantations for the production of sawlogs and pulpwood;
- (b) Establishment and development of about 10,000 ha of new forest plantations for production of sawlogs and pulpwood;
- (c) Construction of about 160 km of forest secondary roads and 725 km of tracks, the upgrading of some 120 km of secondary forest roads to primary forest roads, and the maintenance of existing and new roads and tracks;
- (d) Construction of 58 staff houses and other buildings and structures and the maintenance of existing and new houses and buildings;
- (e) Strengthening of the mechanical engineering services and financial and management information systems of the project, and the provision of short study tours for selected project staff;
- (f) Short-term consultancies and studies to review the project's fire protection system; the die-back problem of pine trees in the Sao Hill; stumpage fees and pricing of forestry products in the country; and existing and planned programs for national village afforestation.

3.3 The project, to be implemented over five years, was to be executed by the Forestry and Beekeeping Division (FBD) of the Ministry of Land, Natural Resources and Tourism. Total project costs were estimated at Tsh 123.6 million (US\$ 15.0 million) with a foreign exchange component of 41% (US\$6.2 million equivalent).

4. Project Design and Organization

4.1 The project was designed in light of the lessons learned in Phase I. The objectives were simple and clear and all the components were relevant, designed along classical forestry lines, and straightforward to implement. Responsibility for implementation and management was placed on the FBD, thus simplifying project execution. Responsibilities for project management were clearly demarcated between the FBD and the Ministry, but no formal link was established between the project and the local authorities. The simplicity of design and the clearly defined physical units upon which progress could be monitored allowed timely intervention and contributed to the success of the project.

4.2 In retrospect, it can be said that the omission of an applied research component for tree improvement was a flaw in project design, considering the potential benefits likely to come from the supply of genetically improved seed and the likelihood of increased wood production and quality. In addition, the exclusion of local community participation in the planting and supply of wood was short-sighted, as this activity would have generated an important additional source of raw material (para. 8.2). It can also be said that project design underestimated the difficulties involved in securing adequate Government funds and labor for the project.

5. Project Implementation

5.1 The project was beset with problems during its early stages of implementation. Credit effectiveness had to be extended twice from the original date of August 19, 1982 to March 16, 1983, until the recruitment of the long-term consultants had taken place, this being a condition for project/credit effectiveness. Although the deterred credit effectiveness did not affect the afforestation program because of the provision for retroactive financing, the issue of consultant recruitment occupied a great deal of project management time and there was considerable urgency to settle this issue. Realizing its delay, and responding to pressure exerted on it, the project management rushed through the recruitment of consultants whose performance proved to be less than satisfactory (paras 11.1-11.2).

5.2 The project faced one of its most serious difficulties in September 1983 when about 5,000 ha of plantations established under Phase I were destroyed by fire. Not having procured suitable fire fighting equipment or having put in place sufficient protection measures, the project was not able to fight the fires effectively. This incident was a shock both to the project management and to the staff, and badly affected their morale. Staff morale was further affected by the continuous Government underfunding of the project.

5.3 Project start-up and implementation coincided with a period of poor economic performance in Tanzania which had started during the implementation of Phase I. Therefore, difficulties with funding should have been anticipated and remedies incorporated. The most outstanding constraint to project implementation remained shortage of funds throughout. For most of the project years, funds approved by Government were less than 50% of what was requested (Annex 5). Project Management reacted by giving priority to the afforestation program at the expense of silvicultural practices and construction of roads and buildings. This approach paid off because, not only did the increased afforestation improve staff morale, it also succeeded in achieving the plantation targets and the replanting of the areas damaged by fire within the envisaged implementation period of five years. On the other hand, execution of the other components (i.e., silviculture and the construction of roads and buildings) and the studies required the extension of the credit closing date three times from December 31, 1987 to December 31, 1990.

5.4 Procurement of equipment was slow due to lengthy Government procedures and a lack of strong administrative support from the Ministry and the FBD in Dar-es-Salaam, at least in the initial years. Major procurement of equipment, including the fire fighting equipment, did not take place until 1985/86. Notwithstanding the delay in procurement, faulty fire fighting equipment, such as water pumps, also reduced the effectiveness of the equipment. Another procurement problem arose when the installation of the radio communication system was awarded to an unqualified company, following local bidding procedures insisted on by the Central Tender Board. More emphasis was placed on lower bidding than

on the suitability of equipment (particularly taking standardization into account). The project workshop contains a striking variety of vehicles and equipment makes and models. In addition, procurement of some equipment, such as radio and other communication equipment, did not include essential spare parts. As a result, some equipment is already non-operational due to a lack of spares or batteries, although it was only installed in 1987

5.5 Despite its problems, the project has been successful in meeting its primary objectives and has even exceeded its targets. It should be recalled, however, that the project passed through trying periods, particularly in the early years. In 1984/1985, the problems were so grave that the Bank's supervision missions recommended that the Government transfer the management of the plantation from the FBD to other institutions such as the SPM. To the credit of the project management and staff, however, project performance from this point improved dramatically, prompting the extension of the credit. The main reason for the change was the dedication of the staff and the project management's responsiveness to staff needs. Project management provided non-monetary incentives to the staff in the form of agricultural land for the cultivation of food crops (preparing this land when possible) and better quality housing. Management also engaged itself in dialogue with casual labor and addressed some of their problems (e.g. providing transport to and from distant villages). In addition, a different management system was introduced in the Plantation Divisions. First, the number of divisions was increased from three to four. Second, each division was to be managed for a specific output (i.e., sawlog or pulpwood). Third, the managers of Plantation Divisions were made totally responsible for managing their plantations, including fire protection. All this created a better understanding between project staff and management and conferred a higher level of accountability to the staff. The continuity of staff in working with the project also helped.

6. Project Results

6.1 The project has successfully achieved its main objective of establishing resources necessary to supply the wood-based industry. The afforestation targets of the project (new planting and replanting) greatly exceeded those established at appraisal: 22,500 against 10,760 ha (excluding replanting of burned and failed areas). The plantations are of good quality and are expected to yield substantial and high quality wood (Annexes 1 to 4). A recent study conducted by consultants under the project concluded that sufficient plantations have been established by the project and that no new plantings are necessary at least for the next decade, save that of replanting logged areas.

6.2 The project has been implemented along the lines envisaged at appraisal and there were no changes in objectives. The project exceeded its planting targets mainly as a result of the shift in emphasis towards afforestation in the earlier years and the prolonged implementation period. Other components were delayed in the initial years but were executed later, particularly during the project extension period. The construction of buildings has exceeded appraisal targets. With regard to roads, project management decided to substantially increase the construction of secondary roads, abandoning the upgrading of secondary roads and the construction of new tracks. At present, this choice does not seem to have seriously affected access to the plantations, but whether large vehicles and equipment will be able to enter all the plantation areas in the future remains to be seen. The standard of the roads constructed is good. Of all the project activities, pruning and weeding were below the appraisal expectations, accounting for 48% and 97% of targets respectively. In addition to the non-availability of funds, these activities suffered from labor shortage. Labor availability in the project area was grossly overestimated at appraisal and the

project had to transport labor from areas as far as 100 km away. A mechanical engineer was recruited but did not engage in training; hence, the objective of strengthening the mechanical engineering services was only partially met. Some short study tours for selected project staff were undertaken.

6.3 The project's financial rate of return based on an individual hectare model for pine sawlog, pine pulpwood and eucalyptus is 18%. This is higher than the 7% calculated at appraisal due to the increased yields assumed by the PCR and to the increase in stumpage fees in recent years (Annex 7). The economic rate of return calculated for the pine sawlog plantations over 25 years, pine pulpwood over 20 years and eucalyptus over 10 year rotation (with three coppices) has been estimated at 33%, slightly higher than the 30% estimated at appraisal.

6.4 Overall, the project's impact on the forestry sub-sector and on the environment has been commendable. The project has enabled the country to become self-sufficient in industrial timber, thus reducing the pressure on the natural forest resources. In addition, it will enable the pulp and paper mill as well as the sawmill to operate at full capacity on a sustainable basis for the future. The effect of this will be to satisfy the domestic market (thus substituting imports of paper and paper products) and possibly enable the exportation of high quality paper and related products.

6.5 The project's impact on the environment has been beneficial, and this has been readily recognized by local inhabitants. Reduction of wind movements, retention and slow release of precipitation, and the return of wildlife, particularly small animals, have been singled out by local inhabitants as some of the important project benefits. Mention has also been made of the improved living conditions brought about by the increase in employment opportunities, the increased availability of fuelwood and easy transport due to improved access. The project has also prompted spontaneous private local planting of pine and eucalyptus following the project's example. This trend is rapidly increasing to the extent that the project is unable to cope with the growing demand for seedlings and technical advice.

7. Project Sustainability

7.1 The plantations established by the project can provide sustainable production to the wood-based industry. The project management and staff have proven that they can establish and manage plantations even under difficult conditions. The sustainability of production will, however, hinge on continued government support, availability of adequate funds for operation, maintenance and replacement of equipment, the retention of high quality staff and careful protection of the resource from fire, disease and encroachment. It would be difficult to achieve the above if the project were to be managed under a normal Government department with all the lengthy bureaucratic procedures that can impede rapid decision-making. The value of the resource warrants vesting management with full responsibility and sufficient autonomy and making management accountable for all the operations and results.

7.2 At present, the FBD and the project management are concerned about the future of the project after the cessation of World Bank support. The FBD has proposed to the Government that an autonomous body be established that can manage the plantations using funds from the Government or retained funds from the royalties collected. Proposals from the users of the raw material have also been made. The SPM has proposed to take over and incorporate the management of the plantations as part of its current operation. The Sao Hill Sawmill, on the other hand, has suggested to Government that FBD be left to

manage the plantations and its activities be expanded to harvesting so that the project would sell sorted logs at the roadside.

7.3 It is clear from the above that the FBD and the industry consider the future management of the plantations to be crucial for the sustainability of production. They have all alerted the Government that an early decision is necessary and have indicated their preferred management type. The Government is presently discussing the matter and is expected to decide soon. It is unfortunate that the decision was not taken much earlier so that the prevailing uncertainty could have been avoided. The main aim now should be to remove this uncertainty before the confidence and morale of the management and staff are affected.

7.4 Sustainable production sufficient for the current wood-based industry can be assured by either applying a system of two separate pulpwood and sawlog working circles or a fully integrated sawlog/pulpwood operation. The latter would, of course, be more efficient in utilizing the raw material but more demanding in terms of organization and management. At present, it is clearly seen that material suitable for pulpwood, but not for sawing, is being wasted in sawlog circles, while big logs found in the pulpwood circle are being chipped instead of being sawn. Such waste should be avoided, regardless of the system of management, and efficient utilization of the resources should be part and parcel of the management plan.

8. Bank Performance

8.1 The Bank's decision to support a second phase plantation project at Sao Hill was sound, as the project will contribute to the long-term development of the wood-based industry. This project is one of the few to have been successfully implemented in Tanzania during the 1980s, in spite of the prevailing economic problems. The project was straightforward and well focussed, as was the delineation of implementation and management responsibilities. These characteristics of the project were certainly important factors in the successful implementation of the project.

8.2 In retrospect, it can be said that the appraisal mission failed to grasp the importance of tree planting to the local population when it excluded the village woodlot development component proposed by the preparation mission and substituted it with a study on national village afforestation. The latter study has also not been carried out by the project. It is unfortunate that the opportunity to support or encourage tree planting by the local population was missed in a place where there is a strong desire to plant trees. The appraisal mission was, however, correct in restricting the plantation to Sao Hill and reducing project costs by half, compared to the proposals made at the time of project preparation. Nevertheless, it fell short of proposing a workable system of advancing funds to the project, even though it could have been anticipated that the Government would face difficulties in securing the annual funds for the project in a time of worsening economic conditions.

8.3 Making the recruitment of consultants a condition for credit effectiveness wrongly implied that this was the most important element of the project, whereas the procurement of fire fighting equipment and the preparation of a plan for fire protection would have been a more appropriate condition for effectiveness, given the high forest fire risks in the area. Designating an expatriate consultant as Assistant Project Manager with authority over civil servants should have been recognized as a potentially controversial issue. In fact, the consultant was never given this authority, and this remained a matter of

contention until the project nominated a Tanzanian Assistant Manager and the consultant's responsibility was restricted to finance and planning.

8.4 The Bank supervised the project intensively as the situation warranted. The supervision missions were extremely helpful in identifying the main problems facing the project, in advising project management on how to solve them, and in continuously signaling to Government the difficulties faced by the project and the need to provide political and financial support. It is doubtful whether the project's success would have achieved the present level if the supervision missions had not critically reviewed the project and consistently attempted to identify and address the issues. The supervision mission recommendation to extend the project was farsighted and gave the project an opportunity to step up the implementation of the non-afforestation components. This also enabled the project to carry out two thorough studies not foreseen at appraisal (i.e., the potential of mechanical wood industry development and the integration of operations which included a study on royalties). Following the recommendations of the latter study, the Government raised the stumpage fees to bring them closer to cost recovery levels.

8.5 The following lessons may be learned from the implementation of the Sao Hill Forestry Project:

- (a) Great care needs to be taken to ensure that an item designated to become a condition of project effectiveness is, in fact, of such importance that project implementation cannot commence without it;
- (b) Selection and recruitment of consultants should not be rushed even if project start-up is delayed;
- (c) When the provision of monetary incentives to project staff (working in remote areas) is not possible, other non-monetary incentives may be equally appreciated and contribute to staff morale and continuity;
- (d) Careful assessment of Government capability to allocate sufficient funding is necessary during project appraisal;
- (e) Staff continuity is an essential ingredient to successful implementation of projects;
- (f) The management of industrial plantations such as in Sao Hill cannot be successfully carried out under normal government bureaucracy; and
- (g) Projects of this nature should work in harmony with the local authorities and population and linkages should be established from the onset.

9. Borrower Performance

9.1 The Government has supported the project, and the shortage of funds experienced during project implementation should not be construed as a lack of Government support, but rather the result of economic difficulties. This is acknowledged by the project management who suffered most from the shortage of Government funds. The Borrower designated the project as one of its priorities, and as such allocated relatively large amounts of resources to the project. Within the Ministry's budget, the project

obtained the lion's share. When shortage of material was a chronic problem, the Government issued specific permits to procure materials such as cement, steel, oil and fuel. Nevertheless, although dictated by economic difficulties, the fact remains that the Government did not fulfill its commitment to provide adequate funds to complete implementation on time, nor did it review project targets and objectives in line with available resources.

9.2 The Borrower's contribution to project preparation was the successful implementation of Phase I and inclusion of the lessons learned in Phase II. The project therefore had a good start even though it later deteriorated because of adverse events (paras 5.2 - 5.4) which could have been avoided by stronger Government support. Consequently, project management's effectiveness declined dangerously, putting the plantations at risk. Project management, however, has shown a remarkable capacity to successfully establish forest plantations under difficult conditions and, at the same time, to raise staff morale, although this often resulted in a lack of achievement in other components. The Borrower should be commended for allowing staff to continue working for the project. Most of the senior and professional staff, including the Project Manager, have been working for the project since its inception (some of them were employed under Phase I).

9.3 The Borrower made what use it could out of the long-term consultants, but was unable to provide them with the benefits they had expected, mainly in accommodation, with some consequent failure in relationship, morale and performance. Good use was made of the short-term consultants who dealt with forestry technical matters. Full use was not made of the results of the plantation survey and the 1987 aerial photography. No regular mapping work was carried out by the project, and this needs to be corrected.

10. Project Relationship

10.1 In spite of the problems faced by the project, particularly concerning the long-term consultants and the weak management of the project in the early years, the working relationship between the Borrower and the Bank has remained good throughout. There was initially some bitterness on the part of the project management with regard to the pressure exerted on them to recruit consultants expeditiously, especially when their eventual performance was below expectation. This did not spoil the good relationship, however, because both the project management and the supervision missions recognized the importance of making the project successful. In addition, the views of both parties on the consultants became closer as time passed. The relationship between the Bank and project management also remained remarkably good even when the Bank requested that the Government transfer the management of the project away from the FBD.

11. Consulting Services and Studies

11.1 Early calls for strengthening financial management, planning procedures and mechanical engineering services resulted in the conditional recruitment of three long-term consultants: an Assistant Project Manager (Finance and Planning); a Workshop Manager; and a Work-Study Specialist. Recruitment of the first two consultants was a condition for credit effectiveness. These consultants were appointed for three years but the Assistant Project Manager (Finance and Planning) remained only one year before he was terminated due to illness, while the Work-Study Specialist was terminated for poor

performance after two years. The Workshop Manager stayed for five years, his contract has been extended by two years.

11.2 In general, the long-term consultant services did not meet expectations, because of both the environment in which they were operating, and a lack of clear understanding of their roles and functions. Recognition is given to the contribution of the Workshop Manager in organizing initial repair of vehicles and in preparing bid tender documents. The disorganized state of the vehicle park, the lack of shade and the non-availability of some necessary workshop equipment (because they were not installed), however, reflect a lack of planning and work discipline.

11.3 The project undertook three studies identified at appraisal, i.e., a study of the fire protection system, a study of die-back problems of pine trees and a review of the stumpage fees and prices of forestry products. The first two studies were carried out by FAO and the last one by a private consultant. Although useful, the recommendations of the first two studies were not followed immediately because of problems of funding and procurement of equipment. The recommendations of the third study were ignored for many years, necessitating a new up-to-date study in 1989 (para. 11.4). The recommendations concerning stumpage fees contained in this follow-up study were accepted by Government (Annex 7). Another study envisaged at appraisal, viz, national village afforestation, was never initiated because this was later expected to be covered under a different authority on wood energy.

11.4 The development of the pulp and paper mill and the emphasis being placed on management were supported by two thoroughly professional studies covering "Mechanical Wood Industry" and "Integration of Operations". These studies were not included at the time of appraisal, but resulted from increased awareness of the need for better management, a forest plantation inventory including an aerial survey, and a long overdue review and increase in stumpage fees, which are now effective.

12. Project Documentation and Data

12.1 On the whole, the Development Credit Agreement was adequate and straightforward. However, requiring as a condition of Credit Effectiveness the recruitment of non-forestry consultants caused some initial implementation problems (para 5.1). In addition, the project documents did not clearly delineate the management functions of the expatriate Assistant Project Manager vis-a-vis the senior project staff (para 8.3). Notwithstanding, the project documents proved to be valuable tools for project management in the implementation process.

12.2 In the early years, there was a deficiency in accounting procedures and delays in withdrawal applications and reporting of project progress. The Government was slow to establish a separate account for the project, and auditing of accounts was consistently delayed because of a shortage of project accountants in the earlier years and the time it took to carry out audits. At completion, the relevant data on the project was recorded adequately, although some divergence is noticed between Plantation Divisions data and the overall project data.

PART II. PROJECT REVIEW FROM BORROWER'S PERSPECTIVE "

13. General Remarks

13.1 The Project Completion Report is neat, precise and adequate in factual information. We commend the mission for good work.

13.2 We would like to commend all World Bank Supervision Missions for Sao Hill Forestry Phase II. To us they were not supervision missions but task managers in arm whose interest and ours was the same - i.e., to implement Sao Hill Forestry, Phase II successfully. Were it not for their competence, understanding and determination, achievements in Phase II would have fallen below average. We are proud that we have had the opportunity to work with them to make Sao Hill Forestry, Phase II a success at a time when the economic performance of the country was very poor.

13.3 The Ministry of Natural Resource and Tourism made sure that the Sao Hill Forestry Project got a share of the little cake available to them. Project management received unflinching support from the Directorate and Ministry and, indeed, without their moral and material support, the picture would have been different.

13.4 As the report is factual, our comments are directed to those areas where we consider amplification to be necessary, as follows:

14. Project Design and Organization

14.1 Although the Project was designed in light of the lessons learned in Phase I, important issues identified by the project Preparation Mission were played down by the Appraisal Mission. The issues include:

- (a) Lack of maps, aerial photographs and sufficient management information. Simple and clear solution of this problem was not given and consequently there was very little improvement in these areas in Phase II. Efforts to include development of aerial photography facilities in the Project were not accepted.
- (b) Delays in Procurement continued in Phase II and were complicated by adverse conditionality for Credit effectiveness. Funds should have been set aside for Direct procurement of urgent items.
- (c) Staff remuneration continued to be insufficient in Phase II. Project designers did not incorporate a system of allowances and incentives to motivate project staff. This was a

" Transcript of letter received from the Ministry of Tourism, Natural Resources and Environment.

serious omission given the fact that while other World Bank projects in Tanzania such as the Maize Project, Cashewnut Project, etc., performed poorly, the Sao Hill Forest Project had been successful. Despite this omission, Project staff worked hard and made Phase II another success at a time when the economic performance of the country was poor.

- (d) The Project designers noted the contribution of top management in the success attained in Phase I. They consequently tied up top management at Sao Hill for the whole period of Phase I and Phase II without any incentive or inducement. An award should have been made to those who made Phase I successful and those who were to be retained for Phase II should have received appropriate inducement/incentives.
- (e) Project Designers noted that Government funding was short coming and scaled down the Project but failed to include remedies in case the economic situation deteriorated. One such remedial measure would have been direct disbursement as and when it was clear that the Government had limited funds to use under the Reimbursement Procedure.
- (f) The conditionalities put in the loan agreement by the project designers were not only adverse but were also uncalled for. The recruitment of a Workshop Manager, Workstudy Specialist and Financial Expert were input from the Project emanating from lessons learned in Phase I. These were being called in to increase efficiency and effectiveness and not to start the Project. To delay the implementation of the Project until these people were recruited allowed the Phase I work tempo to slow down. It took time for the work tempo to pick up again after the loan was effective following the recruitment of these consultants.
- (g) The omission in the appraisal of the Pilot Village woodlot component was a blow to the Project. Villagers, individuals and institutions continued to demand seedlings to establish their own woodlots during phase II but the Project could not meet their demand. Spontaneous private woodlots are on the increase in the area and their growth could have increased more than ten fold had the Pilot Village Woodlot component been included. This would have contributed a lot to the campaign by the Government to ameliorate the environment by planting more trees.

15. Project Sustainability

15.1 The sustainability of the Project hinges on continuous management and protection of the forest plantations. This requires adequate and steady financing coupled with committed and well motivated staff.

15.2 Secondly, after two successful phases of cooperation between the World Bank and Government of Tanzania in establishing and managing the forest plantation at Sao Hill, cooperation should now be directed toward the use of the resource we have created. The World Bank Industrial Division in cooperation with UNIDO, UNDP and FAO should now help the Government to develop strategies to increase the capacities of the present industries and to establish new industries. Joint ventures in industrial development should be considered. Protection of the resource against fire is another area of cooperation.

16. Borrower Performance

16.1 The failure in relationship with the long term consultants was not due to an inability to provide them with the expected benefits. The failure was due to:

- (a) Hurried (through pressure) recruitment which left no room for a critical evaluation and analysis of the qualifications/suitability of the candidates. The borrower was pressurized to have the consultants as otherwise the loan would not be effective.
- (b) Misconception of the consultants as to who was their employer. They all demanded that they were World Bank employees while the Project management insisted that their employer was the Government of Tanzania. They thought that they were sent to the Project to oversee implementation on behalf of the World Bank. Project management insisted that they were employees who had to work with all other project employees to implement the Project. This scenario was the source of bad relations and soared up whenever Project management pointed out to the consultants that they were not delivering the goods they were paid to deliver.

17. Project Completion Report

17.1 The format should have been discussed with the borrower and especially the guidelines for preparing Part II. This would have facilitated speedy preparation of the same.^{1/}

18. Economic Impact^{2/}

18.1 We consider the mean annual increments used to be rather low. We consider 20m³/ha/year (sawlogs) 15-18m³/ha/year (Eucalyptus) to be more realistic. The Rotation ages are 20-25 years for sawlogs; 15-20 years (pine pulpwood); and 8-10 years (Eucalyptus).

^{1/} The format and guidelines for Part II were explained to FBD staff in Dar-es-Salaam by FAO/CP but were not conveyed to the project management in Mafinga.

^{2/} See Table 6 for mean annual increments and rotation ages used in the PCR.

PART III. STATISTICAL INFORMATION

Table 1: Related Bank Loans/Credits

Project Title Loan/Credit	Purpose	Year of Appraisal	Status	Comments
Sgo Hill Forestry Project (Loan 1307-TA)	Development of industrial plantations for pulp and timber	1976	completed	This was the first phase of the project in question.
Mufindi Pulp and Paper Project (Credit 1370-TA)	Provision of technical assistance for operation and management, staff training, and purchase of some equipment.	1983	completed except for TA component	The mill is now called Southern Paper Mills. The bulk of the project's plantations will be used by this mill.

Table 2: Project Timetable

Item	Planned Date	Revised Date	Actual Date
Identification Mission	05/1980		05/1980
Preparation Mission	10-11/1980		10-11/1980
Appraisal Mission	04-05/1981		04-05/1981
Credit Negotiation	02/1982		02/1982
Board Approval	04/13/1982		04/13/1982
Credit Signature	05/19/1982		05/19/1982
Credit Effectiveness	08/19/1982	3/18/1983	03/16/1983
Project Completion	06/1987	06/1989	06/1990
Credit Closing	12/31/1987	12/31/1990	12/31/1990
Account Closing			6/30/1991

Table 3: Credit Disbursements

Cumulative Estimated and Actual Disbursements										
Fiscal Years	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
	(US\$'000)									
Appraisal estimate	550	2,320	4,990	7,390	9,790	11,590	12,000	-	-	-
Actual	-	1,064	1,929	3,409	5,066	5,691	6,816	7,914	8,551	8,742
Actual as % of estimate	0	46	39	46	52	49	57	66	71	73

Table 4: Project Implementation

Indicator	Unit	Appraisal Estimate	Actual
A. Afforestation			
Seedling production	Million	19.5	63
Site preparation	ha	10,000	21,860
Planting and replanting	ha	10,760	22,500
Weeding	ha	33,040	31,065
Pruning	ha	34,344	16,380
Thinnings	ha	264	820
Firebreak construction	km	100	*4,870
Firebreak maintenance	km	1,700	5,510
B. FOREST ROADS			
Upgrading of secondary roads	km	120	-
New secondary roads	km	160	345
New tracks	km	725	-
Road and track maintenance	km	1,890	1,620
C. BUILDINGS/STRUCTURES			
Staff houses	Units	58	91
Divisional offices	Units	1	14
Nurseries	Units	3	-
Fire look-out towers	Units	5	8
Water supply system	Units	3	13

* Includes reclearing of established firebreaks at periodic intervals.

Table 5: Project Costs and Financing

A. Project Costs

Items	Appraisal Estimates *			Actual	% of Appraisal Estimate
	Local Costs	Foreign Exchange Costs	Total		
.....(US\$'000).....					
Afforestation	3,538	1,140	4,678	2,876.3	62
Civil Works	720	525	1,245	1,095.7	88
Vehicle, Machinery & Equipment	135	1,360	1,495	1,508.5	101
Project Administration	1,735	895	2,630	3,771.3	143
Technical Assistance and Training	-	790	790	654.1	83
Total Base Cost	6,128	4,710	10,838	-	-
Physical Contingencies	472	386	858	-	-
Price Contingencies	2,237	1,053	3,290	-	-
Total Project Cost	8,837	6,150	14,987	9,905.9	66

B. Financing

Source	Planned		Final	
	US\$ million	% of Total	US\$ million	% of Total
IDA	12	80	8.7 ^{1/}	88
GOY	3	20	1.2	12

^{1/} This figure is provisional as the project has still to submit more withdrawal applications.

Table 6: Project Results

A. Economic Impact *

	Appraisal Estimate		PCR Estimate	
Economic Rate of Return (%)	30		33	
Underlying Assumptions				
- New planting and replanting area (ha)	10,760		22,500	
- Mean annual increment - pine sawlog (m ³)	15	1/	17	1/
- Mean annual increment - pine pulpwood (m ³)	15	1/	14	1/
- Mean annual increment - eucalyptus (m ³)	18	1/	20	1/
- Rotations - pine sawlog (years)	25		25	
- Rotations - pine pulpwood (years)	25		20	
- Rotations - eucalyptus (years)	8		10	
- Number of coppice for eucalyptus (No.)	3		3	
- Standard conversion factor (No.)	0.55		0.80	

* Please refer to Annex 2,3, and 4 for costs.

1/ Mean annual increments refer to utilizable volumes. At appraisal the plantations were expected to be managed under a fully integrated system unlike the PCR which assumes two separate management system for sawlog and pulpwood. The mean annual increments of the PCR are estimated on the basis of recent inventory data.

B. Financial Impact

	Appraisal Estimate	PCR Estimate
Financial Rate of Return		
- Pine sawlogs	-	19%
- Pine pulpwood	-	13%
- Eucalyptus	-	28%
- Overall plantations	7%	18%

C. Studies

Studies	Purpose as defined at appraisal	Status	Impact of Study
- Review of fire protection	To draw up an implementation plan for fire protection.	Conducted in 1984	Has been used as the basis for the establishment of the fire protection system.
- Comprehensive study of stumpage fees	To become the basis for revising/pricing of forestry products.	Conducted in 1983	The recommendations were ignored until a second study was carried out in 1988.
- Tree physiology	Advise on the modus operandi with regard to the dieback problem in the plantations.	Conducted in 1984	The study showed how to tackle the problem and is included with current research programs.
- National village afforestation	To review existing programs and studies and formulate a National Village Afforestation Programme.	Not conducted; expected to be carried out under the energy sector study.	-
- Integration of operations	<u>Not foreseen at appraisal.</u> Aimed at studying the integration of operations and review of stumpage fees.	Conducted in 1988	Discussions are now underway on how to integrate the operations and under what management. The recommended stumpage fees have been already adopted.
- Mechanical wood industry	<u>Not foreseen at appraisal.</u> To promote the establishment of additional wood industries to utilize surplus wood.	Conducted in 1989	This study was the first to establish that the Sao Hills have surplus wood for the next 10 years.

Table 7: Status of Covenants

Covenants under Credit Agreement	Subject	Deadline for Compliance	Status
1. Section 3.02 (a) and 5.01	Appointment of key staff, i.e. three long-term consultants	This covenant was a condition for credit effectiveness. The deadline suggested was December 31, 1982.	Complied with after a delay of 4-9 months.
2. Section 3.02 (b)	Recruitment of consultants to undertake studies	Not specified	Complied with except the study on National Village Afforestation which was transferred to other programs.
3. Section 3.03	Assignment of counterpart staff	Soon after the recruitment of the key staff	Complied with, but delayed.
4. Section 3.04	Appointment of a qualified Project Manager	From the project's inception	Complied with.
5. Section 3.05	Appointment of six additional Forest Assistants	June 30, 1983	Complied with.
6. Section 3.06	Coordination of harvesting and logging	June 30, 1983	Not complied with. Attempts are now being made to achieve this.
7. Section 3.07	Stumpage Fee Study	June 30, 1983	Complied with, but with delay.
8. Section 4.01 (c)	Submission of audited accounts/SOEs	Not later than six months after the end of each fiscal year.	Complied with, but with delays particularly in the earlier years.
9. Section 4.02	Preparation of Five-Year Workplan	July 31, 1983 and every five years thereafter.	Complied with.

Table 8: Use of Bank Resources

A. Staff Inputs by Stage of Project Cycle in Staff Weeks

<u>Bank Fiscal Year</u>	<u>Through Appraisal</u>	<u>Negotiation Board Approval</u>	<u>Effectiveness Supervi., PCR</u>	<u>Total</u>
1980	8.5			8.5
1981	76.2			76.2
1982	19.5	1.4		20.9
1983			8.6	8.6
1984			14.2	14.2
1985			11.6	11.6
1986			7.7	7.7
1987			19.5	19.5
1988			13.4	13.4
1989			10.7	10.7
1990			8.6	8.6
1991			8.7	8.7
	<hr/> 104.20	<hr/> 1.40	<hr/> 103.0	<hr/> 208.60

B. Missions

Stage of Project Cycle	Month/Year	Number of Persons	Days in Field	Specialization Represented ^{1/}	Performance Rating Status ^{2/}	Types of Problems ^{3/}
Identification	05/80	2	20	E,F	-	-
Preparation	10-11/80	3	77	E,F,FA	-	-
Appraisal	04-05/81	4	96	E,F,FA,I	-	-
Supervision 1	05/82	1	3	FA	-	-
Supervision 2	12/82	1	10	FA	2	M
Supervision 3	05-06/83	2	16	F,FA	2	M,O ^{4/}
Supervision 4	11/83	2	18	F,FA	2	M,F,O ^{5/}
Supervision 5	06/84	2	14	F,FA	3	M,F,O ^{4/}
Supervision 6	12/84	1	9	F	3	M,F
Supervision 7	03/85	1	8	F	3	M,F
Supervision 8	11/85	2	12	F,FA	3	F
Supervision 9	06-07/86	1	9	F	3	F
Supervision 10	10/86	1	13	F	2	F
Supervision 11	05-06/87	1	11	F	2	F
Supervision 12	01-02/88	2	26	F,FA	2	F
Supervision 13	06-07/88	2	26	F,FA	3	F
Supervision 14	02-03/89	2	30	F,FA	2	F
Supervision 15	03-04/90	2	28	EN,FA	2	F

^{1/} E= Economist; EN= Engineer; F= Forester; FA= Financial Analyst; I= Institutions Specialist

^{2/} 1= Problem free or minor problems; 2= moderate problems; 3= major problems.

^{3/} F= Financial; M= Managerial; T= Technical; P= Political; O= Other

^{4/} Shortage of foreign exchange, building material and spare parts.

^{5/} Fire outbreak destroying 5,000 ha of plantations.

Total Area Planted and Replanted (ha) 1/

Year	Pine Pulpwood	Pine Sawlog	Total	Eucalyptus Pulpwood	Total Pine & Eucalyptus
81/82	597	3,953	4,550	78	4628
82/83	482	463	945	428	1373
83/84	297	2,116	2,413	123	2,536
84/85	415	743	1,158	100	1,258
85/86	1,042	-	1,042	218	1,260
86/87	1,052	1,991	3,043	100	3,143
87/88	967	3,265	4,232	175	4,407
88/89	1,014	128	1,142	256	1,398
89/90	464	995	1,459	492	1,951
90/91	578	-	578	-	578
Totals	6,908	13,654	20,562	1970	22,532

Total Area Planted and Replanted

ANNEX 1

Source: Divisional 5 year management plans 1990-94 adjusted to total areas presented in Sao Hill Project Annual Report for January to December 1989, plus figures for harvested areas 1983/84 to 1990/91.

1/ Excluding replanting of areas destroyed by fire or replanting of areas which failed.

Pine Plantations (sawlog circle) One ha Model					
Year	Establishment & Other Costs	Maintenance Costs	Overheads and Administrative Costs	Total	Gross Production (m ³)
	Tsh	Tsh	Tsh	Tsh	
1	3886	176	150	4,212	
2	967	176	150	1,293	
3	958	176	150	1,284	
4		176	150	326	
5 } Pruning	1903	176	150	2,229	
6 }	-	176	150	326	
7	-	176	150	326	
8 } Pruning	928	176	150	1,254	
9 }	-	176	150	326	
10 } Thinning	9712	176	150	10,038	62 <u>1/</u>
11 }	-	176	150	326	
12	-	176	150	326	
13	-	176	150	326	
14 } Thinning	9629	176	150	9,995	88 <u>2/</u>
15 }	-	176	150	326	
16	-	176	150	326	
17	-	176	150	326	
18	-	176	150	326	
19 } Thinning	8526	176	150	8,852	93 <u>3/</u>
20 }		176	150	326	
21		176	150	326	
22		176	150	326	
23		176	150	326	
24		176	150	326	
25	833	176	150	1,159	288 <u>4/</u>

The estimated overbark sawlog and potential recoverable overbark pulpwood yields are as follows:

1/ 9.9 m³ sawlog - 39.7 m³ pulpwood

2/ 28.2 m³ sawlog - 42.2 m³ pulpwood

3/ 52.1 m³ sawlog - 22.3 m³ pulpwood

4/ 161.3 m³ sawlog - 69.1 m³ pulpwood

Pine Plantations (pulpwood circle)
One ha Model

Year	Establishment and Other Costs	Maintenance Costs	Overheads and Administrative Costs	Total	Gross Production (m ³)
	Tsh	Tsh	Tsh	Tsh	
1	3886	176	150	4,212	
2	967	176	150	1,293	
3	958	176	150	1,284	
4		176	150	326	
5	1903	176	150	2,229	
6		176	150	326	
7		176	150	326	
8		176	150	326	
9		176	150	326	
10		176	150	326	
11		176	150	326	
12		176	150	326	
13		176	150	326	
14		176	150	326	
15		176	150	326	
16		176	150	326	
17		176	150	326	
18		176	250	326	
19		176	150	326	
20	1147	176	150	1,473	350 ^{1/}

^{1/} 350 m³ gross overbark is estimated to yield 280 m³ overbark of useable pulpwood.

Eucalyptus Plantations (pulpwood) One ha Model					
Year	Establishment Costs Tsh	Maintenance Costs Tsh	Overheads and Administrative Costs Tsh	Total Tsh	Gross Production (m ³)
1	3,886	176	150	4,212	
2	967	176	150	1,243	
3	958	176	150	1,284	
4		176	150	326	
5		176	150	326	
6		176	150	326	
7		176	150	326	
8		176	150	326	
9		176	150	266	
10	1147	176	150	1,473	250 ^{1/}

Coppice Rotations

Year	Establishment Costs Tsh	Maintenance Costs Tsh	Overheads and Administrative Costs Tsh	Total Costs Tsh	Crop Production m ³	Adjustment production
20	1,667 ^{2/}	1,760	1,500	4,927	275	+ 10% for 1st rotation
30	1,667 ^{2/}	1,760	1,500	4,927	250	0% for 2nd rotation
40	1,667 ^{2/}	1,760	1,500	4,927	225	- 10% for 3rd rotation

^{1/} The 250 m³ gross overbark is estimated to yield 200 m³ overbark of usable pulpwood.

^{2/} Includes cost of Tsh 520/ha for "singling" coppice shoots: reducing them to 2 shoots/stool in years 3-4.

Funds Requested and Approved/Released during the Project Period

(1) Project Year	(2) Amount Requested	(3) Amount Approved/Released	Approved/Released funds as % of requested
Tsh '000.....		
1982/83	32,094	9,589	30
83/84	34,641	15,400	44
84/85	17,300	17,120	99
85/86	47,778	18,543	39
86/87	45,442	42,000	92
87/88	175,821	39,780	23
88/89	110,000	80,000	73
89/90	178,000	58,000	33
90/91	275,000	57,053	21

Project Costs by Year

ITEM	Project Years						TOTAL
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
I. APPROPRIATION							
- Development of existing plant	629.2	300.9	602.9	2,449.2	2,206.2	4,120.9	20,423.0
- Refurbishing of tidal weirs	2,003.7	707.4	1,026.1	609.3	2,267.9	2,808.1	14,988.4
- Development of new plantworks	2,384.9	1,077.9	1,933.3	1,666.0	3,004.1	1,429.7	13,449.7
- Heavy operations	1,807.6	1,011.3	1,203.2	2,143.7	2,006.6	2,444.9	17,087.2
- Fire protection	1,807.6	1,048.3	1,702.0	1,462.6	2,886.7	2,011.6	22,229.1
Sub-total	8,779.9	4,755.9	6,018.3	9,578.8	14,788.4	15,157.7	94,885.0
II. CIVIL WORKS							
- Roads construction and maintenance	302.2	126.2	340.4	79.2	404.7	203.2	2,440.4
- Building and structures	2,703.2	1,029.9	2,242.4	2,267.2	4,449.4	6,097.9	48,289.0
Sub-total	3,005.4	1,156.1	2,582.8	2,346.4	4,654.1	6,301.1	51,139.4
III. VEHICLES MAINTENANCE & EQUIPMENT							
- Staff salaries & wages	2,078.4	2,002.1	2,000.0	4,007.0	6,000.0	6,000.4	63,002.2
- No. ground service costs	1,227.0	1,104.7	1,449.4	1,364.3	2,229.0	2,227.9	24,781.6
- Vehicle operating costs	2,207.9	2,700.2	2,800.4	2,481.3	22,476.6	6,000.2	82,289.6
Sub-total	5,491.1	5,807.0	6,249.8	7,852.3	29,182.6	18,228.5	185,082.2
V. TECHNICAL AGENCIES AND TRAINING							
- Technical assistance	677.9	677.9	776.1	2,400.0	6,912.4	6,000.0	24,800.3
- Staff study tours	10.4	0.0	0.0	76.6	223.4	200.0	3,863.3
Sub-total	698.3	677.9	776.1	2,476.6	7,125.8	6,200.0	28,663.6
Grand total II	21,304.1	19,289.2	21,292.1	29,722.2	72,492.2	91,009.5	432,651.0
Grand total I	2,098.4	1,279.2	1,199.5	1,624.2	1,288.1	729.5	9,006.9

Exchange rate used 1445\$ = 107, 12 03, 17 00, 10 60; 52 50, 03 03, 12 10 and 174 00 for the year 1982/83 to 1989/90 respectively

ANNEX 7

Stumpage Fees

Clearfelling

DBH Class^{1'}	Fees as of July 1989	Revised Rates Shs./m³ (ob)
Less than 20 cm. o.b. ^{2'}	170	300
10-20 cm	190	330
21-25 cm	210	650
26-30 cm	250	770
31-35 cm	270	830
36 cm or over	300	920

Thinnings

- (i) First Thinnings as for rates above with a reduction of 30%.
- (ii) Second Thinnings as for rates above with a reduction of 20%.
- (iii) Third Thinnings as for rates above with a reduction of 10%.

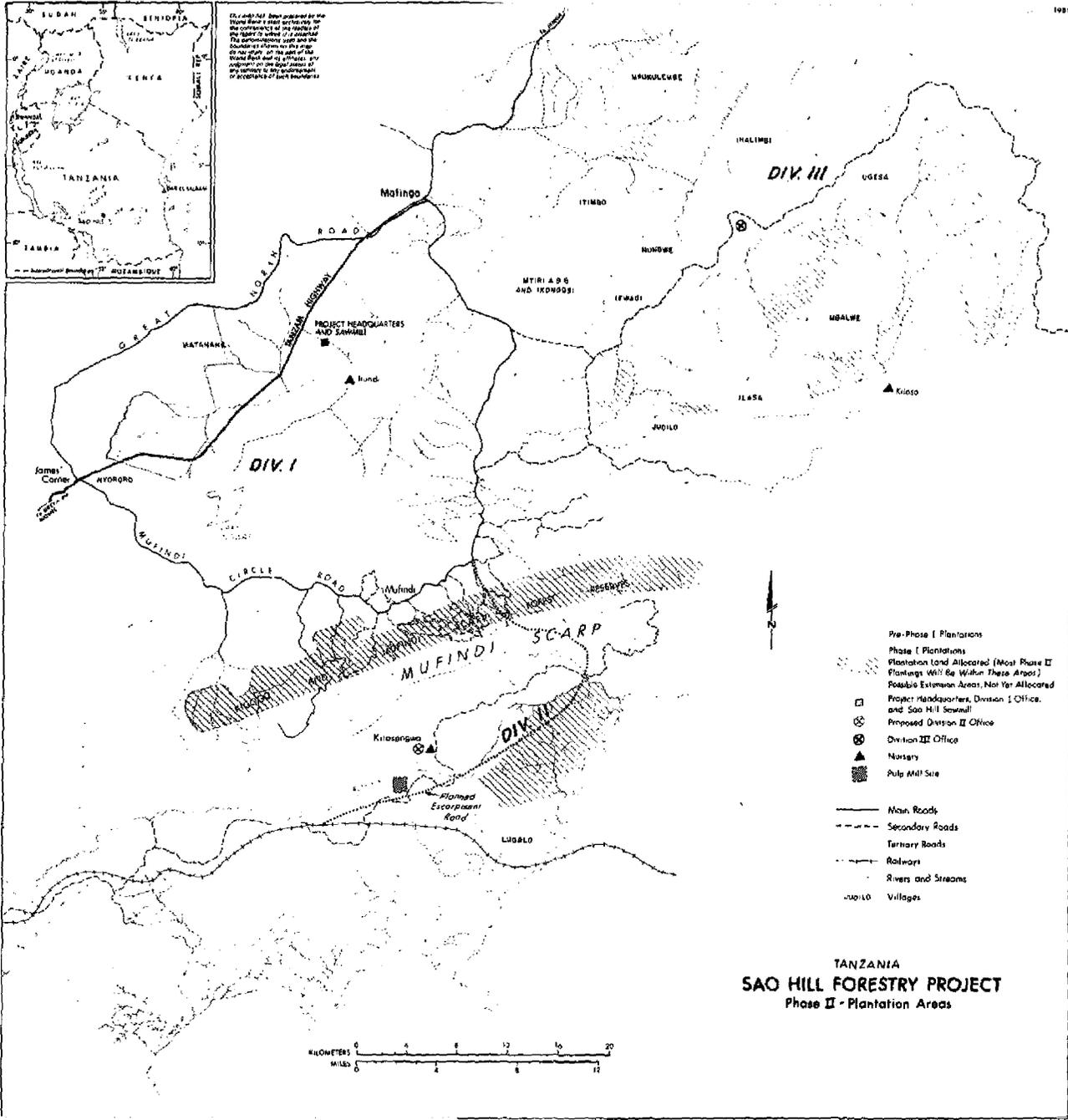
^{1'} Diameter at breast height

^{2'} Over bark

MAP SECTION



This map was prepared by the Forest Dept. in 1961 for the purpose of the contract of the Forest Dept. to carry out a study of the potential for the establishment of a pulp mill in the area of the Great Rift and is intended for use only in connection with the study. It is not to be used for any other purpose without the written consent of the Forest Dept.



TANZANIA
SAO HILL FORESTRY PROJECT
 Phase II - Plantation Areas

