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APPRAISAL OF
GEITA COTTON PROJECT
TANZANIA

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Agriculture Division
Projects Department
East Africa Region

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CURRENCY EQUIVALENTS

US\$1.00 = Tanzania Shilling 7.14 (Tsh)
Tsh 1.00 = US\$0.14

WEIGHTS AND MEASURES

Metric System

1 hectare (ha)	=	10,000 m ² = 2.46 acres
1 kilometer (km)	=	0.62 miles
1 square kilometer (km ²)	=	0.39 sq. miles = 100 ha
1 kilogram (kg)	=	2.20 pounds
1 liter (l)	=	0.26 gallons
1,000 kg = 1 metric ton	=	0.98 long ton

ABBREVIATIONS

NAPB	=	National Agricultural Products Board
NCU	=	Nyanza Cooperative Union
NMC	=	National Milling Corporation
PAF	=	Price Assistance Fund
TANU	=	Tanganyika African National Union
TCA	=	Tanzania Cotton Authority
TRDB	=	Tanzania Rural Development Bank
WCGA	=	Western Cotton Growing Area
WRC	=	Western Research Center

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This report is based on the findings of an appraisal mission to Tanzania in February/March 1973 composed of Messrs. J. H. Cleave, J. Gregor (part-time), A. Marot and G. I. Oluonye (IDA), M. A. Keech and J. P. Tunstall (Consultants).

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Project Organization (World Bank - 8219)

MAP

Geita Cotton Project (IBRD 10439)

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SUMMARY AND CONCLUSIONS

i. Tanzania's development strategy has given increased emphasis to agricultural and rural development. As part of the rural development program and in line with Government's recent decentralization of its administrative functions, a balanced regional development effort has recently been undertaken. Within this context greater attention has been given to the construction of agricultural feeder roads, rural water supplies and health facilities. Education has also been given a high priority. In order to help achieve balanced regional growth, Government intends to concentrate its resources in directly productive investments, particularly in agriculture. The expansion of cotton production has been given a high priority under Government's Second Five-Year Plan (1969-74). Efforts have also been made to increase the level of marketed maize production in order to achieve domestic self-sufficiency.

ii. The proposed Project is designed to increase the incomes of farmers in Geita district, and to support Government's rural development program by supplying essential infrastructure and social services in the area. Over seven years it would intensify production of cotton and maize in Geita by providing credit to farmers for fertilizers and other inputs, tractor and support services to ujamaa villages, and agricultural research and land planning facilities. The Project would support the extension of the rural road network in the district, thus facilitating not only cotton production but also the more general needs of the rural population. The upgrading of the road network would reduce marketing costs and would support the ongoing effort to provide a balanced system of transportation throughout the country. The Project would in addition include provision for expanded educational and health facilities in order to bring badly needed social services to the district. The Project would provide a pattern for the intensification of production which could be adapted for use in other regions in Tanzania.

iii. The Project would reach about 29,000 smallholder families in Geita district, about 40% of the total population in the district. Project implementation would be carried out in three phases, with the most agriculturally advanced areas selected first for development. Geita farmers participating in the Project would include individual farmers, farmers who had consolidated their holdings with neighbors, and farmers in ujamaa villages. The Project would be executed by a Project Unit established within the Tanzania Cotton Authority (TCA) with local coordination through a subcommittee of the Geita District Development Council. Credit would be channeled through the Tanzania Rural Development Bank (TRDB).

iv. An IDA Credit of US\$17.5 million is proposed which would cover the foreign exchange component of the Project (US\$14.1 million) and 35% of local costs over the seven year period (1974/75 - 1980/81). This would represent

74% of total Project costs of US\$23.8 million (Tsh 170 million). IDA funds for farmer credit would be made available to TRDB at 4% annually. TRDB would onlend short and medium-term credit to cooperatives at 8-1/2%, and they in turn would onlend to farmers at the same rate - the standard rate for final borrowers in Tanzania. TRDB would also receive on the same terms funds for tractor loans which it would on lend through its Mwanza Office. TCA would receive annual subventions from Government for the workshop, housing, storage, office and laboratory construction, vehicles, the water supply and staff costs. Government would retain funds for road construction, the soil laboratory, health facilities and education centers. Imported goods, mostly tractors, tillage equipment, fertilizers and ULV pumps and spares, valued at US\$3.5 million, would be procured by international competitive bidding in accordance with Bank/IDA guidelines. In evaluation of bids local manufacturers would be allowed a preference margin of 15% or the existing rate of import duties, whichever is lower. Orders of less than US\$30,000 would be procured in accordance with Government procedures. Due to their small size and the fact that they would be scattered over a wide area, construction of workshops, housing and other buildings would be by force account or local competitive bidding. The road study (US\$345,000) would be carried out by consultants chosen in accordance with IDA guidelines. Project roads would be constructed by contractors chosen after international competitive bidding. However, such roads may be constructed by force account or by contractors selected after local bidding as agreed with the Association following a review of the findings of the road study by Government and IDA.

v. From Year 15 onward the Project would yield incremental annual cotton production of over 50,000 bales valued at about US\$7 million on the world market. The annual net foreign exchange earnings would be about US\$3 million equivalent. The annual increment of maize for domestic consumption would be 45,000 tons. Cash incomes of participating farmers would be increased by about 64%.

vi. The internal economic rate of return of the Project is estimated at 14% over a twenty-year period. In this calculation 50% of the costs of road construction and the road study were attributed to the Project, and the costs of school and health facilities were omitted. The benefits attributed to road construction represent only the direct saving in running costs of cotton and maize vehicles, including savings from reduced distances travelled. The rate of return would be sensitive to changes in some of the basic parameters. With the costs of schools and health facilities included the return would be 13%. If 100% of the costs of roads were included the return would be 10%. A 10% drop in yields or prices would reduce the return to 7%, but a 10% increase in benefits would give a return of 21%.

vii. Five IDA credits totalling US\$44.6 million have been approved thus far for agricultural projects in Tanzania. These include one for agricultural credit, two for livestock and one each for tobacco and tea. In addition, an education credit in 1971 provided US\$3.3 million for agricultural training. Performance under these projects has been mixed.

viii. The Project would be suitable for an IDA credit of US\$17.5 million to the Tanzania Government.

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I. INTRODUCTION

1.01 One of the most important aspects of Tanzania's development strategy is the increased emphasis on agriculture and rural development. As part of the rural development program and in line with Government's recent decentralization of its administrative functions, a balanced regional development effort has recently been undertaken. This effort is designed both to make maximum use of the growth potential in each region and to narrow the gap between regions in terms of the supply of essential services. Within this context greater attention has been given to the construction of agricultural feeder roads, rural water supplies and health facilities. Education has also been given a high priority and efforts have been made to gear the system more closely to the needs of a rural society. In order to help achieve balanced regional growth, Government intends to concentrate its resources in directly productive investments, particularly in agriculture. As cotton has excellent potential for rapid expansion, and as more farmers are engaged in its production than any other crop, the expansion of cotton production has been given a high priority under Government's Second Five-Year Plan (1969-74). Maize is the staple food of the rural population and efforts have been made to increase the level of marketed production in order to achieve domestic self-sufficiency.

1.02 The proposed Project would over seven years intensify production of cotton and maize in Geita district. It would provide credit to farmers for fertilizers and other inputs, tractors and support services to ujamaa villages, and agricultural research and land planning. The Project would support the extension of the rural road network in the district, thus facilitating not only cotton production but also the more general needs of the rural population. The Project would in addition include provision for expanded educational and health facilities in order to bring badly needed social services to the district.

1.03 Five IDA credits totalling US\$44.6 million have been approved thus far for agricultural projects in Tanzania. These include one for agricultural credit, two for livestock and one each for tobacco and tea. In addition, an education credit in 1971 provided US\$3.3 million for agricultural training. Performance under the projects has been mixed. In reference to cotton loans extended under the now completed credit project, a need was found for improved supervision of cooperative society loan records and input distribution. The first livestock project has progressed satisfactorily and is nearing completion, and the second credit has only recently become effective. The development of the tobacco project has been disappointing and slower than expected and has encountered difficulties due to inadequate services (mainly water) in the new settlement areas and the premature introduction of collective cultivation under the ujamaa system. The Project has been rephased and an upgraded water system provided; some project farmers are now also being

permitted to farm individual tobacco plots within ujamaa villages. A review in August, 1973 reported, however, that despite satisfactory management, recruitment of new growers is still behind schedule. The smallholder tea project is also encountering problems with farmer recruitment, and the planting program is about two years behind schedule. Weak management and other difficulties have slowed progress, and it is expected that the project will be re-phased. Construction under the education credit is not now expected to be completed on schedule owing to delays in tender procedures; however, all contracts for construction of various institutions have been awarded.

1.04 The loan application was prepared by the Government with assistance from the IBRD Permanent Mission to East Africa (PMEA). This report is based on the findings of an appraisal mission to Tanzania in February/March 1973 composed of Messrs. J. H. Cleave, J. Gregor (part-time), A. Marot and G. I. Oluonye (IDA), M. A. Keech and J. P. Tunstall (Consultants).

II. BACKGROUND

A. The Economy of Tanzania

2.01 Overall, Tanzania is sparsely populated; the average density is under 15 per km², but most of the 13.9 million people are concentrated in a few areas, including that south of Lake Victoria. The population is increasing at about 2.7 percent a year. Fluctuations in the performance of the agricultural sector have been responsible for variations in the growth rate of the economy of between 2.3 and 6.0 percent from 1969 through 1971. Per capita GNP is estimated at US\$105.

2.02 Tanzania's socialist development philosophy aims at reducing inequalities in income distribution through emphasis on smallholder agriculture and rural development and through State control of important industries, services and large-scale agricultural enterprises. Growth has been behind the Second Five-Year Plan (1969-1974) targets, mainly due to failure of the main agricultural crops to reach plan projections; this was due in part to bad weather and to the fact that Government had not provided the necessary conditions and incentives for an expansion of smallholder production. For the same reason exports have been sluggish, resulting in a deficit on the country's external trade balance. To facilitate rural development and to improve its overall efficiency, Government in 1972 decentralized a number of its important administrative activities. Under this decentralization scheme, the country's 18 Regions and 63 Districts were given substantial power to control budgets, programs and planning in their jurisdictions.

B. The Agricultural Sector

The Organization of Production

2.03 Most production is concentrated on smallholdings which are cultivated by hand and produce family subsistence as well as cash crops. The family provides most of the labor, and hiring workers is discouraged as alien to the socialist spirit of the country. Limited use is made of oxen, mainly in the less densely populated parts of the Western Cotton Growing Area (WCGA). Annual crops are typically grown in a rotation of bush-fallow, and frequently crops are inter-planted. Plots tend to be irregular but fragmentation is only serious in such densely populated areas as Kilimanjaro. The area cultivated by a family is generally about 5-6 ha. Although some private tractors operate successfully in WCGA and the Kilimanjaro area, Government organized tractor operations for smallholders have not generally been successful due both to the high cost of the initial investment required and the low returns to operations. On the basis of earlier programs, it is now evident that intensification of agriculture is an essential prerequisite to the widespread introduction of tractors in this area.

2.04 Cotton is the most important smallholder cash crop in terms of numbers of growers and it is the second largest foreign exchange earner after coffee; ninety-five percent of the crop is produced in the WCGA. Other important crops are coffee, cashew nuts, tea, tobacco, maize and rice. Large-scale estates produce sisal, coffee, tea and coconuts, and state farms mainly wheat, rice and livestock. Estate production has diminished in importance, particularly as production of sisal has declined, and the state farm program remains small. Tanzania's national herd of 13 million cattle grazes extensively over the 40 percent of the country which is free from tsetse fly. There is little integration of livestock into arable farming.

Ujamaa Villages (Annex 1)

2.05 A major instrument of Government's rural development strategy is the reorganization of production on communal lines in "ujamaa" villages, usually comprised of 60-70 families. Ujamaa is a voluntary movement based on a maximum of self-help and self-reliance; the ultimate aim is to transform ujamaa villages into production-based, multi-purpose cooperative societies. Some of these are formed by physical resettlement, others without change of location. Although their justification is social and political, Government recognizes that ujamaa villages must be economically viable. Success in implementing this program has varied considerably between areas and regions, and over-enthusiasm by local officials has on occasion led to undue pressure on farmers to form ujamaas, with subsequent adverse effects on production. There has been some opposition by farmers to the ujamaa, particularly in areas with established cash crops. In December 1972 a total of 5,556 ujamaa villages involving nearly 2 million people were in some stage of development, and 315 of these were registered cooperatives.

Cotton and Maize: Production, Marketing and Processing

2.06 Although total cotton production has been highly variable over the past decade, cotton has the highest potential for absolute growth of any agricultural product. Increases in production in the immediate future could be expected as a result of area expansion as well as yield increases due to improved seed, fertilizers and ULV (ultra-low-volume) sprays. The acceptance of fertilizer and spray would depend on relative prices of the inputs and cotton, the proven increments from fertilizers, the effectiveness of the ULV sprays, and the coverage and quality of extension staff. These factors are in turn dependent on high levels of farmer husbandry, as the returns to improved inputs are relatively low in the first years after their introduction. Total cotton production over the past five years has averaged about 350,000 bales. With projected increases in area and with improved inputs, this total is expected to rise to about 540,000 bales in 1974, although weather conditions could cause wide variations in output. This projection is substantially short of the Second Plan Target of 600,000 bales by 1974, however. (If the current rate of expansion continues, this target would not be achieved until 1977 or 1978).

2.07 As with most of the agricultural products destined for export and a number of crops sold internally, cotton and maize are handled by statutory marketing agencies, and prices to producers are regulated by Government. The buying agents for the marketing agencies are the Cooperative Unions and their member societies. About one-third of all farmers are members of cooperative societies. Seed cotton is purchased from farmers by a cooperative society of which the farmer may or may not be a paid-up member. Each society in a cotton area has a seed cotton store, a cotton seed store, an office and a house for the society secretary. Nationwide pre-planting prices are fixed for two grades of seed cotton, and payment is in cash on delivery less any debts for inputs provided on credit earlier in the season and deductions to meet society operating costs. Crop financing is provided to Unions by the Tanzania Cotton Authority (TCA) which also makes loans for seed cotton stores and provides society cotton seed stores and ginnery storage. Seed cotton is bulked at the society before being transported to a Union ginnery.

2.08 Maize is the staple food of the rural population and the most important cereal in the country. The objective under the Second Plan is to achieve domestic self-sufficiency and to carry sufficient stocks to maintain supplies in years of poor harvests. Maize not used for on-farm consumption is sold to the National Agricultural Producers Board (NAPB) at prices set by Government. Because they are residual, NAPB purchases fluctuate, but they are generally about 20-30% of total annual production. Marketed production over the last decade has averaged about 100,000 m tons annually, varying between 47,000 m tons in 1969/70 and an estimated 175,000 m tons in 1970/71. In better years NAPB stores part of its purchases against crop failure and allocates the remainder to the National Milling Corporation (NMC) for processing and sale. In recent years domestic supplies have been inadequate and Tanzania has had to import maize. Costs of production could be considerably lowered by the introduction of high-yielding hybrids and through

increased application of fertilizer. Output of maize is extremely responsive to improved inputs, and the higher yields would simultaneously benefit the producers and allow lower prices to consumers.

Price Stabilization and Subsidy Policies

2.09 Government's crop pricing policy is generally to minimize year to year price fluctuations. In the case of cotton, an export crop, this policy is effected through a Price Assistance Fund (PAF) into which trading surpluses of TCA, after payment of export duty, can be paid in years of good world prices. The funds are used to support farmers' prices in less favorable years. Surpluses were estimated in June 1973 to be about Tsh 160 million. In view of the exceptionally high current prices for cotton this total would be even greater, but Government has recently increased the export duty to a rate which diverts new funds from TCA to General Revenue.

2.10 In the 1972/73 crop year Tanzania introduced a policy of subsidizing 50% of the cost of fertilizers and insecticide to be used on cotton; the PAF was used as a source of subsidy funds, and it is expected that this arrangement will continue. By encouraging peasant farmers to adopt innovations, it was expected that the subsidy would make it possible to reach production targets established under the Second Five-Year Plan. Even without the subsidy, innovations would prove increasingly profitable to farmers - particularly as management improved - but experience has shown that large initial returns are needed to persuade peasants to accept new ideas and ensure their long-run adoption. The subsidy is being gradually introduced, and it is expected that Mwanza region including the Project area would be covered in 1973/74. The cost of the subsidy would more than be covered by the existing export duty on all cotton exported from Tanzania.

Agricultural Credit

2.11 The Tanzania Rural Development Bank (TRDB) was founded in 1971; it was the fourth of a succession of rural credit institutions and the third in the decade following independence (Annex 2). TRDB provides long, medium, and short-term credit to farmers through cooperative societies; it also administers special funds on behalf of Government, and is the main credit channel for IDA funds. The standard rate of interest charged by TRDB on short and medium-term loans is 8-1/2%, and the rate on long-term funds is 7-1/2%. Societies onlend to members at the same rate. At the end of March 1973, TRDB loans to societies totalled Tsh 122 million. Overdues represented 21% of the portfolio, and only half of these were covered by provision for bad debts. However, this situation arose mainly from debts taken over from predecessor organizations. There was a marked improvement in debt recovered in the first quarter of 1973, and in response to suggestions from IDA, TRDB will be taking new measures to ensure repayment by borrowers. With Government backing and control of credit at farmer level (para 4.12), TRDB would be a satisfactory channel for continued lending of IDA funds.

Research and Extension

2.12 Agricultural research is organized in twelve major centers. Priorities are set at a conference under the chairmanship of the Director of Research in the Ministry of Agriculture (Kilimo). Both cotton and maize research for WCGA is concentrated in the Ukiriguru Research and Training Institute. This, along with six substations and the Nyegezi Training Institute, makes up the Western Research Center (WRC). Maize research has concentrated on development of improved varieties and on fertilizer trials. Research on cotton has centered on breeding for higher yields and pest resistance; assistance in this work has been given by the Cotton Research Corporation of London. The plant breeding and pathology sections of WRC are well staffed and the research program in these fields has been satisfactory. However, the entomological section is understaffed - one entomologist has to carry out a cotton research program for the whole WCGA - and another agronomist is needed to work on field trials of fertilizer response. An assurance was obtained at negotiations that Government would adequately staff the WRC to enable it to provide support for the Project and to help prepare the ground for future projects.

2.13 The agricultural extension service is organized regionally with a coordinating office in Dar-es-Salaam. There are about 2,500 field staff engaged on crop work, and a further 2,000 on animal husbandry and animal health programs; the average worker is responsible for 900-1,000 farmers. The regional staff is headed by a Regional Agricultural Development Officer (RADO), assisted by graduate Agricultural Officers in charge of districts and Field Officers and Assistant Field Officers with diplomas and certificates respectively from training institutes. The extension services have thus far been rather ineffective in introducing improved techniques to farmers. Major factors have been the lack of adequate staff, inadequate retraining in the more valuable techniques, and poor management; the latter is reflected in a lack of logistic support, frequent transfers, and problems with the administration of pay and allowances.

III. THE PROJECT AREA

3.01 The Project area would cover the 9,067 km² of Geita District in Mwanza Region (Annex 3). The district borders the southern end of Lake Victoria, and altitudes vary from 1,050 m on the lake to 1,200 m further inland. It is served by an all-weather road from Mwanza via a ferry at Busisi, and a network of roads and tracks - many of which are passable by heavy vehicles only in dry weather.

3.02 Annual rainfall in Geita totals about 1,000 mm, but tends to vary between years and locally within the district. The soils of the district are varied but fall into three main types: alluvial soils, mostly used for rice and livestock grazing; granitic soils, with fair agricultural potential, on which most of the cotton, maize, cassava and sorghum of the district is grown;

and banded iron-stone soils, of moderate to high fertility but inclined to erode easily. The two latter types respond to nitrogenous and phosphatic fertilizers. Individual farms are typically laid out down a catena which would embrace a range of soil types.

3.03 Most of the population, estimated at about 425,000 in 1972, has migrated to the district in the last quarter century. Overall density is about 47 per km², but this figure is considerably higher - about 75 per km² - in the northern and eastern parts of the district which were earlier settled. The population is primarily dependent on agriculture for a livelihood.

3.04 Family cash incomes in Geita are estimated at about Tsh 800 (US\$115). The value of subsistence production adds about another Tsh 750-1,000 to the total incomes. This gives a per capita income in the district of about US\$45. Cotton is the major cash crop, but sales of cassava are important locally, and maize is sold in the better years. Livestock also makes an important contribution to farm income.

3.05 Most farms average about 8-12 ha, and less than half of the total area is under cultivation at any one time. The concept of ujamaa is being slowly accepted in Geita, and at present there are only 50 ujamaa villages, three of which are fully established. The average ujamaa comprises about twelve families.

Agricultural Production

3.06 About half of the land area outside the Geita Forest Reserve is suitable for cultivation. Crop rotation is usually followed by a fallow period of equal length. Cassava may be grown on part of the fallow and rice in the wet, arable bottom land. Cotton and rice are usually grown in pure stand; maize, beans, millets, legumes and sweet potatoes are frequently sown as mixtures. Crops are usually grown on broad-based ridges, spaced at five-foot intervals. This system provides good weed control, reduces erosion, and is particularly suited to hand cultivation. In the past, family labor has often been supplemented by communal work groups or hired labor, but hiring of labor is now discouraged. There is a small amount of ox-cultivation, mainly in the south, but tractor cultivation is gradually becoming more popular. The tractors are privately owned by operators who migrate with their units.

3.07 About 95% of the farmers in Geita district grow cotton. Production over the last five years has averaged 56,000 bales of lint, 16% of Tanzania's production. The district's production has increased thirteen fold over the last 30 years as a result of both higher yields--from improved seed and better husbandry--and an increase in area following migration into new parts of the district. The district is divided into four ginneries zones (Map), each served by a single ginmery owned by the Nyanza Cooperative Union (NCU). The capacity of the ginneries, estimated at 100,000-111,000 bales, is adequate to deal with production increases in the Project period. The baled cotton lint is moved from three ginneries to railhead at Fela on NCU vehicles; that from Buchosa goes by lighter to Mwanza. From these points all lint except that

supplied to local mills is railed to Dar-es-Salaam for export. With the exception of nearly 20% reserved by TCA for planting, cotton seed is sold to oil mills for crushing. Most of the oil mills are owned by NCU and overall capacity is sufficient to handle expected production increases.

3.08 Maize, the dominant staple in the district, is grown by virtually every farmer. Yields vary widely from year to year, as the area is only marginally suitable for maize production. Production averages about 42,000 tons per year, of which less than 1,000 tons of grain is sold to NAPP.

Credit

3.09 About 5% of farmers in Geita district receive loans each year through the 107 cooperative societies, but there is considerable turnover in borrowers from year to year. Loans, mainly for fertilizers, insecticide and pumps, are made in kind and are recovered by deduction from farmers' cotton proceeds. No collateral is required, and the allocation of credit rests with the society committee. Credit records are kept by the society secretary, who plays a major role in loan recovery. Society accounts are audited by staff of the Cooperative Development Division of the Prime Minister's Office; there is one inspector for every 7 societies. Default on loans has been widespread. The major problems are the lack of communal responsibility for the unrecovered balances and inefficient management of many of the societies. Also, although only registered members of cooperative societies may obtain loans, all cotton farmers sell their cotton through societies. It has therefore been simple for borrowers to avoid deductions by selling their crop either to a society other than that through which they borrowed, or through a friend or relative who has not borrowed.

Land Tenure

3.10 Land rights in Tanzania are vested in Government, but allocation, although formerly the responsibility of the chiefs, is now carried out by the local Village Development Committee. A family has secure tenure on the land as long as it is put to productive use. Land cannot be sold or used as collateral, but the right of usufruct can be inherited.

Roads

3.11 The rural road network in Geita district is in generally poor condition. However, some upgrading of about 306 km of roads and tracks is now being undertaken by the Ministry of Communications and Works (Comworks) Betterment Unit organized under the Third Highway Project (Credit 265-TA). This improvement is designed to support cotton production in the district, and is scheduled for completion in FY 75/76. Local main roads and district roads in the area are maintained by the District Comworks organization, and are the immediate responsibility of the District Engineer, Geita.

IV. THE PROJECT

A. General Description

4.01 The Project would over seven years (1974/75-1980/81) increase the output of cotton and maize in Geita district. It would reach some 29,000 smallholder families (175,000 persons), 40% of the total population of the district. The Project would include:

- (a) provision of supervised incremental credit to farmers for fertilizers, insecticide, improved maize seed, and spray pumps; it would also provide cultivation credit for the hire of tractors;
- (b) intensification of production through provision of tractors and supporting services to some ujamaa villages;
- (c) extension services and supervision of cooperative credit procedures;
- (d) railhead and society storage for inputs and incremental produce;
- (e) road study and construction;
- (f) agricultural research, soil analysis and land planning; and
- (g) technical and social services and provision for Project evaluation.

The Project would be executed by a Project Unit established within the Tanzania Cotton Authority (TCA). Credit would be channeled through the Tanzania Rural Development Bank (TRDB).

B. Project Phasing and Farmer Participation (Annex 4)

4.02 Under the Project the district would be divided into three areas (Map 10439) and Project implementation would be carried out in three phases. The most agriculturally advanced area would be selected first for development. Recruitment of farmers and most Project investments would be initiated in one area at a time; the timing of the second and third phases would depend on the rate of progress in preceding phases. The areas and the year in which each phase is scheduled to begin are:

- (a) Phase I. Nyang'wale, Kalangalala and Msalala Divisions, and Bukoli sub-division of Busanda Division: 1974-75 crop season;

- (b) Phase II. Bugando Division and Busanda Division, less Bukoli sub-division: 1976-77; and
- (c) Phase III. Karumo and Nyakalilo Division: 1977-78.

4.03 Three groups of Geita farmers would be included in the Project: selected individual farmers, farmers who have consolidated their holdings with neighbors, and farmers in ujamaa villages. Selection of farmers would be the joint responsibility of the 'Balozi' ^{1/} and the local extension officer. As optimum results from selected inputs can be achieved only with good husbandry, participating individual farmers would generally be expected to be among the more progressive farmers (para 6.01).

4.04 Farmers would be encouraged to consolidate their holdings to form contiguous blocks of at least 5 ha in order that they could meet Project conditions for receiving tractor services (para 4.09). Individual ownership of the land thus consolidated and of the crops would be retained if farmers so wished. The highest level of consolidation would take place when farmers grouped themselves into an ujamaa village which, when fully established and able to meet Project conditions, would own its own tractor for use on the village lands and on nearby consolidated holdings. To encourage development of adjoining areas and to facilitate the cotton improvement program, the Project Manager would permit neighboring qualified ujamaas to purchase a tractor and enter the Project even though located in areas designated for later development.

4.05 Within each phase it is anticipated that farmers would join the Project over a four-year period. The farmers in the Phase I area are among the most responsive in the district, and in this area a greater degree of land consolidation and ujamaa development would be expected. However, the longer lead time, increasing experience of Project staff, and the demonstration effects of Phase I would result in a more rapid rate of farmer participation in the two later phases. If the response of farmers were faster than expected, the schedule could be advanced; if delays were encountered, the later phases would be delayed so that funds would not be committed to capital investment (including training) greatly ahead of production increases.

4.06 It is assumed that all 29,000 participants would have entered by the 1980/81 growing season. The process of consolidation and formation of ujamaa villages would, however, continue some years beyond the Project period. The expected Project build-up (Annex 4), is detailed below:

^{1/} The sole political party on the mainland, the Tanganyika African National Union, TANU (Annex 1), is organized in a pyramid structure at the base of which are cells of ten households. The unpaid chairmen of the cells, the Balozi, are party members elected by the cell members, and provide an effective means of communicating with all farmers. The Project would aim to make the party organization largely responsible for the mobilization of farmers.

	<u>1974/75</u>	<u>1975/76</u>	<u>1976/77</u>	<u>1977/78</u>	<u>1978/79</u>	<u>1979/80</u>	<u>1980/81</u>
Project Farmers (Cumulative)	2,200	5,400	10,700	18,800	24,700	28,000	29,000
Consolidated Holdings	300	800	1,900	3,800	6,200	9,000	11,900
Total Cotton Area (ha)	2,800	6,900	13,900	24,400	32,400	37,200	39,200
Total Maize Area (ha)	2,300	5,600	11,200	19,700	26,200	30,300	32,000

4.07 The success of the Project would to a great extent be dependent on the rate at which farmers would be willing to accept good husbandry methods and the use of fertilizer and sprays on the cotton and maize crops, as well as their perception of the economic return to the additional inputs required. The long-run return to farmers would be good; however, as traditional farmers are often resistant to change and as it would take some time for the farmers to become proficient in the use of inputs, it would be necessary to subsidize the inputs over the early stages of each phase of the Project. Once the advantages of these new techniques become apparent, the subsidy could be gradually removed. It is estimated that a 50% level of subsidy - that currently applied to fertilizer and insecticides (para 2.10) - would be sufficient to promote the regular use of the selected inputs provided under the Project. Farmers would be eligible for the subsidy for the first five years of development in each phase, and it would then be removed over three years. Assurances were obtained at negotiations that the necessary incentives to ensure farmer participation in the Project, including but not limited to the use of a subsidy program, would be established and maintained, and that sufficient funds would be made available for this purpose.

C. Detailed Features

Farm Inputs and Credit

4.08 The Project would provide incremental credit for the purchase of seasonal inputs for cotton and maize, cultivation credit for the hire of tractor services, and four-year credit for purchase of tractors. Credit would be in kind. A fertilizer and spray store would be built at each cooperative society. Nitrogenous and phosphatic fertilizers would be applied to both cotton and maize. Initially, the present blanket recommendations would be followed (Annex 5), but fertilizer applications would eventually be modified in line with the recommendations of the Project Research Unit. Ultra-low-volume (ULV) sprayers, with adequate spares, and insecticides would be available for cotton. Through societies, three to four farmers

would be encouraged to cooperate in the use of each sprayer, and all extension staff would be trained to carry out necessary maintenance and repairs. An insecticidal dust (para 7.05) would be applied to maize, which would be grown from improved seed to be supplied through the Project. Input requirements are at Annex 5, Table 1.

Mechanization and Workshops (Annex 6)

4.09 The Project would encourage the mechanization of basic land preparation under those conditions where it would be economically and financially justified. Land preparation is carried out at a time of year when the ground is hardest and the climate is its hottest; farmers therefore generally delay preparation until the rains have softened the soil and working conditions have improved. By this time, however, the optimum planting dates often have passed. Mechanized land preparation would consequently ensure the timely planting of cotton and maize, a major factor in the attainment of improved yields. The Project would provide tractors to some ujamaa villages on four-year credit; these would then be operated as a commercial enterprise. To qualify for credit, a village would be required to be a registered cooperative or a member of a cooperative, have two trained drivers, and have a minimum of 240 ha earmarked for tractor cultivation within its own boundaries or in consolidated blocks of over 5 ha within 5 km of the farm. Strict adherence to these conditions would be necessary. Farmers with consolidated holdings would also be eligible to hire tractors owned by neighboring ujamaa villages. This service would be obtained on credit under the conditions laid down and supervised by the Project. Hire rates would be set annually in the Project plan of operations (para 5.01). The owning village would have its account with TRDB credited with the hire cost as endorsed by the farmer and his Balози.

4.10 Mechanization would involve land preparation, ridging and fertilizer application, and would require changes in the pattern of production. Post-harvest cultivation would be introduced, and a five-year rotation (cotton-maize-cotton-fallow-fallow) followed. To assist ujamaa farms in adapting to this regime, the Mechanization Section (para 5.05) would be responsible for training of drivers, setting of hire charges, supervision of credit requirements, advising on tractor operation and maintenance, and provision of movable workshops or repair facilities as appropriate.

Agricultural Extension and Credit Supervision

4.11 The Project would provide intensive extension coverage in Geita district. Initially, there would be one contact-level worker--Assistant Field Officer, grade II (AFO)--per 150 farm families, but this ratio would be reduced after the fourth year of each phase to 1:250. There would be one Field Officer (FO) to every 15 AFO's. The extension staff would work in close cooperation with the TANU organization in the district and would look to the Balози to mobilize Project farmers for meetings and demonstrations as well as to assist in the selection of participants. AFO's would be provided with bicycles, and FO's with light motorcycles. Provision is made for junior staff houses to be sited as needed to ensure coverage of remote areas of the district. The Project would also provide for one cinema van and other extension aids.

4.12 A cooperative credit supervisor for every two cooperative societies would be financed. They would supervise the consolidation of annual input requirements, train society staff in the distribution of inputs, and help ensure that credit repayments are effected. Provision would be made for housing of credit officers and for transport for supervisory staff.

Storage

4.13 Under the Project an input store would be provided at each cooperative society within the Project (Annex 6, Table 1). These cooperative society stores would be constructed immediately prior to the start of each phase of development. Seed cotton storage would be expanded as required by increases in production, but cotton seed storage is adequate. Additional storage would be provided at railhead to accommodate supplies of fertilizer and insecticide prior to distribution to societies.

Roads

4.14 Of the 306 km of roads and tracks scheduled to be improved under the Third Highway Project (para 3.11), 230 km in the eastern section of Geita district would be developed under Phase I of the Project, and 76 km in the northern section would be developed under Phase III. Financing would be provided under the Project for a study of roads and tracks not being improved under the Third Highway Project which need to be upgraded in order to support cotton production. The total additional distance involved is estimated at 800 km. The Tanzanian Government has been asked to make arrangements for consultants to carry out the study. This would include recommendations as to alignments, design standards and methods for the improvement of existing roads or construction of new ones and would provide estimates of costs and benefits. Terms of reference for the study are set out in Annex 7.

Agricultural Research and Soil Analysis

4.15 An adaptive research program would be carried out by the Project Research Unit. The program would be designed to improve the efficiency of use of insecticides and fertilizers on both cotton and maize in Geita. Provision would be made for an entomologist and agronomist, supporting staff, a field laboratory, equipment, housing, stores and transportation. A trial center at Geita would carry out farm trials. Assurances were obtained at negotiations that Government would make available to TCA 25 ha of unoccupied land near Geita suitable for agricultural trials.

4.16 A soil laboratory would be set up to provide soil analyses from which refined fertilizer recommendations could be made. The laboratory would be sited in existing buildings at Ukiriguru, where research work to improve the chemical determination of fertilizer needs is already underway; in case of excess capacity this facility would be able to serve the rest of WCGA. Assurances were obtained at negotiations that the Project would be granted priority in the use of the soil analytical laboratory.

Land Use Planning

4.17 The Project would provide for a land planning unit to demarcate farm boundaries on ujamaa farms and the larger consolidated holdings, and to provide a farm planning service for farmers. The unit would also plan farm track alignments, develop soil conservation layouts, plan village layouts, and assess water supply needs. Extensive use would be made of existing aerial photographs held at Nyegezi Training Institute.

Social and Technical Services

4.18 Project services would include:

- (a) Water Supply. As Geita district is naturally well-supplied with water, the only additional facility required would be a pumped water supply to the Nyamalilo ginnery.
- (b) Health Centers. Government plans to develop a rural-based health system with one center per 50,000 persons; Geita now has only three of the 7 centers projected under this plan. These health centers would serve areas over 20 miles from existing centers or from the two district hospitals; each center would service five satellite dispensaries. Under the Project four such centers would be constructed and equipped. One each would be constructed at Kibingo and Chinfunfu, and the remaining two would be located by the District Development Council. Assurances that appropriate staff and medical supplies would be made available to the centers were obtained at negotiations.
- (c) Community Education Centers (CEC). Government also plans to provide four-classroom community education centers throughout the district. Four CEC's would be constructed under the Project, which would be the same as those being developed under the Fourth Education Credit (from which the designs would be supplied). The location of the CEC's would be agreed between the Project Unit and the regional education authorities. Assurances were obtained at negotiations that teachers and funds for recurrent expenditures would be made available.
- (d) Procurement Officer. In order to improve overall procurement performance throughout Government, provision would be made for a Procurement Officer to be attached to TRDB for three years. The Officer would handle procurement for both this and other IDA projects, and would train other Government staff in international procurement procedures.
- (e) Project Evaluation and Planning. A Project Evaluation Unit would be established to improve on base-line data, analyze progress of the Project, evaluate Project components, and

undertake farm management research to obtain planning data. The unit would also be responsible for preparation of a follow-up project in Geita district or in neighboring cotton areas.

D. Project Costs (Annex 8)

4.19 Total Project cost is estimated at Tsh 170 million (US\$23.8 million), of which US\$14 million or 59% would represent foreign exchange requirements. Details are summarized in the following table:

	<u>Local</u>	<u>Foreign</u>	<u>Total</u>	<u>Local</u>	<u>Foreign</u>	<u>Total</u>	<u>Foreign</u>
	-----	Tsh'000	-----	-----	US\$'000	-----	Exchange
							%
<u>Farm Credit</u>							
Seasonal Credit (fertilizer, insecticides and seed)	2,803	12,771	15,574	392	1,788	2,180	82
Medium-term credit							
- sprayers	434	2,462	2,896	61	345	406	85
- tractors	772	4,372	5,144	108	612	720	85
- ploughs/ridgers/tillers	433	2,454	2,887	61	344	405	85
- cultivation credit	1,020	1,021	2,041	143	142	285	50
Sub-total	<u>5,462</u>	<u>23,080</u>	<u>28,542</u>	<u>765</u>	<u>3,231</u>	<u>3,996</u>	
<u>Project Investment</u>							
Vehicles	142	804	946	20	113	133	85
Storage	7,282	2,090	9,372	1,019	293	1,312	22
Buildings	386	386	772	54	54	108	50
Housing	5,007	1,252	6,259	701	175	876	20
Equipment (incl. mobile units)	203	1,149	1,352	28	161	189	85
Ginnery and water supply	74	295	369	10	42	52	80
Road survey	665	1,798	2,463	93	252	345	73
Road construction	10,537	24,588	35,125	1,475	3,442	4,917	70
Health facilities	1,400	1,400	2,800	196	196	392	50
Schools	2,514	977	3,491	352	137	489	28
Sub-total	<u>28,210</u>	<u>34,739</u>	<u>62,949</u>	<u>3,948</u>	<u>4,865</u>	<u>8,813</u>	55
<u>Project Administration</u>							
Wages and salaries	16,813	9,458	26,271	2,354	1,324	3,678	36
Other operating costs	1,490	1,489	2,979	209	208	417	50
Sub-total	<u>18,303</u>	<u>10,947</u>	<u>29,250</u>	<u>2,563</u>	<u>1,532</u>	<u>4,095</u>	42
Total	<u>51,975</u>	<u>68,766</u>	<u>120,741</u>	<u>7,276</u>	<u>9,628</u>	<u>16,904</u>	
<u>Contingency Allowances</u>							
Physical	5,809	8,022	13,831	813	1,123	1,936	58
Price	11,685	23,723	35,408	1,636	3,321	4,957	67
Total Project Cost	<u>69,469</u>	<u>100,511</u>	<u>169,980</u>	<u>9,725</u>	<u>14,072</u>	<u>23,797</u>	59

Costs are based on recent development experience and appraisal finding, and are inclusive of taxes (Tsh 5.12 million over the Project period). Physical contingencies of 15% have been applied to road construction costs and 10% on all other Project costs. Cumulative price contingencies of 7% annually have been applied on both local and foreign exchange costs.

E. Financing

4.20 Financing of Project costs would be shared in the following amounts and proportions:

	Tsh (million)	US \$ (million)	%
IDA	125.0	17.5	74
Government of Tanzania	<u>45.0</u>	<u>6.3</u>	<u>26</u>
Total	<u>170.0</u>	<u>23.8</u>	<u>100</u>

The proposed IDA credit of US\$17.5 million would be on standard terms to Government. This would finance the foreign exchange cost and 35% of local costs. IDA funds for farmer credit would be made available to TRDB at 4% annually. TRDB would onlend short and medium-term credit to cooperatives at 8-1/2% and they would in turn onlend to farmers at the same rate - the standard rate for final borrowers in Tanzania. TRDB would also receive on the same terms funds for tractor loans which it would onlend through its Mwanza office. TCA would receive annual subventions from Government for the workshop, housing, storage, office and laboratory construction, vehicles, the Nyamalilo ginnery water supply, and staff costs. Government would retain funds for road construction, the soil laboratory at Ukiriguru, health facilities and education centers. These would be handled through the Ministries of Works, Agriculture, Health and Education respectively.

F. Procurement

4.21 Tractors (US\$720,000), tillage equipment (US\$405,000), fertilizers and insecticides (US\$2.0 million), and ULV pumps and spares (US\$406,000) would be procured by international competitive bidding in accordance with Bank/IDA guidelines. In evaluation of bids local manufacturers would be allowed a preference margin of 15% or the existing rate of import duties, whichever is lower. Orders of less than US\$30,000 would be procured in accordance with Government procedures; orders would be bulked to the maximum extent possible. Due to their small size and the fact that they would be scattered over a wide area, construction of workshops, housing and other buildings would be by force account or by local competitive bidding. The road study (US\$345,000)

would be carried out by consultants chosen in accordance with IDA guidelines. Project roads would be constructed by contractors chosen after international competitive bidding. However, such roads may be constructed by force account or by contractors selected after local bidding as agreed with the Association following a review of the findings of the road study by Government and IDA. Assurances that these procedures would be followed were obtained at negotiations.

G. Disbursement (Annex 9)

4.22 Disbursement of funds from the credit would be on the following basis:

- (a) 100% of foreign or 70% of local expenditures for the incremental cost of seasonal inputs including fertilizers, insecticides, seeds and equipment operating expenditures (US\$1.9 million); 100% of the foreign or 70% of the local cost of agricultural equipment including sprayers, tractors, ploughs, tillage equipment and TCA vehicles and equipment (US\$1.7 million);
- (b) 100% of the foreign costs of expatriate staff and the foreign costs of the road study (US\$1.5 million);
- (c) 70% of total costs of road construction, houses, buildings, schools, health centers and the water supply (US\$5.7 million);
- (d) 70% of local costs of the Project Unit operating expenditures (US\$1.8 million); and
- (e) an unallocated amount of about US\$4.9 million representing contingencies on the above categories and transferable to them as required.

Disbursement against (a), (b) and (c) would be fully documented; disbursement against (d) would be made against certificates of expenditures endorsed by the Project Manager, the documentation for which would not be submitted for review, but would be retained by the Borrower and available for inspection by the Association during the course of supervision. The estimated schedule of disbursement is shown in Annex 9. Any funds remaining on the credit account upon completion of the Project would be used, at the Association's discretion, for the continuing development of cotton in Geita district.

H. Accounts and Audit

4.23 Commercial accounts for the Project specifically geared to cost control and management operations would be maintained and published in the

accounts of TCA. TRDB would keep a separate account for disbursements under the Project. During negotiations, assurances were obtained that both accounts would be audited by auditors acceptable to IDA, and that the accounts and auditors' reports would be submitted to the Association within six months of the close of the financial years of TCA and TRDB. All cooperative societies would keep simple accounts of loans to individual farmers and ujamaa villages. These accounts would be audited by the Registrar of Cooperatives and assurances were obtained at negotiations that audits would be undertaken within six months of the close of the financial year of each society.

V. ORGANIZATION AND MANAGEMENT

Project Administration (Chart)

5.01 A Project Unit with headquarters at Geita would be set up as a semi-autonomous division of the Tanzania Cotton Authority (TCA). Local coordination would be achieved through a subcommittee of the District Development Council which would be composed of: Area Commissioner, Geita (Chairman); District Chairman of TANU; District Development Director, Geita; General Manager, TCA; General Manager, NCU; and Regional Agricultural Development Officer, Mwanza and the Project Manager. The Project would thus be identified as a district-level scheme and coordination with other district activities would be ensured. An annual plan of operations detailing proposals for Project execution would be drawn up by the Project Unit by 1st March of each year, and agreed with the Association by 1st May of that year. Assurances to this effect were obtained at negotiations.

5.02 The post of Project Manager would be filled by a person of proven administrative ability, preferably with field experience in smallholder agricultural projects. The Deputy Project Manager, unless the background of the Project Manager suggests otherwise, would be a man with proven technical expertise in smallholder agriculture. A Project Accounting Unit headed by an expatriate Accounts Officer would be located at TCA headquarters at Mwanza. Assurances were obtained at negotiations that appointment of a suitably qualified Project Manager, Deputy Project Manager and Accounts Officer would be made only after prior consultation with the Association.

Field Organization

5.03 The field organization would be divided into three sections--extension, mechanization, and credit services--established at the commencement of the Project. (Overall staff requirements are detailed in Annex 10.) Each section would be headed by a suitably qualified and experienced senior officer, whose appointment would be made after consultation with IDA. Assurances to this effect were obtained at negotiations.

5.04 Supervision of the Extension Section would be the responsibility of a Chief Extension Officer, with a Field Officer (FO) in charge of the area of

each phase of development. Under him there would be an Assistant Field Officer, grade I (AFO I) for approximately each 15 AFO II. Contact would be maintained at each level with the TANU District, Ward and Ten-cell organization (Annex 1). Personnel would live in their areas close to cooperative societies or at ujamaa villages.

5.05 The Mechanization Section would have a flexible organization geared in size to the number of tractors in the Project. Initially, it would operate from Geita in mobile units (four-wheel drive utility vehicles) carrying sufficient equipment to carry out basic repairs; each unit would be staffed by a mechanic grade II and an assistant/driver. Movable workshops would be established at a later date, each with an FO (Mechanization) in charge of operations in the phase area, including supervision of mobile units. Movable workshops would probably be established at Karumwa (1978-79), Sengerema (1979-80) and Bilulumo (1981-82). The central workshop at Geita, which would double as a training center for drivers, would be developed in three stages as the Project expands.

5.06 A Chief Credit Officer would direct a Credit Section with an organization similar to that of the Extension Section. There would be one credit officer for every two societies. The ratio of credit officers to Project farmers would be high in the initial years of each phase (ratio of 1:300) when the logistical problems would be greatest and society staff would need most guidance; eventually each officer would be responsible for 500-600 farmers.

Staff and Training

5.07 All staff whether seconded or newly recruited would be employed by TCA, and assurances were obtained at negotiations that terms and conditions of service and transfer would be finalized between Government and TCA and details furnished to the Association. Government would second existing extension and cooperative field staff to the Project at the beginning of each phase of the Project. The extension staff would be retrained in short courses emphasizing cotton and maize intensification which would also familiarize them with the Project organization. The courses would be organized by Project management in conjunction with the Regional Agricultural Development Officer, using Kilimo facilities. Cooperative development staff would receive similar retraining under the Project in conjunction with the Regional Cooperative staff and TRDB. Courses would cover estimation and handling of input orders as well as credit operations.

5.08 Extension staff recruited directly would have two-year certificate level training. Training facilities within WCCA are available at the Institute at Ukiriguru, ^{1/} and throughput at the Institute would be adequate for Project needs. New credit staff would be drawn from two-year diploma graduates of the Cooperative College at Moshi, and there would be no difficulty supplying this need. However, as there are conflicting demands for diplomates from Ukiriguru and Moshi, assurances were obtained at negotiations

^{1/} To be expanded under the Third Education Project.

that they would be made available to the Project as the need arises. All Project extension and credit staff would attend periodic refresher courses.

5.09 The few mechanics needed in the early stages of the Project would be recruited from technical school graduates, and would receive further training under the Project; provision is also made for the training of later recruits. Staff for the Land Planning Unit would be trained at Nyegezi Training Institute with field work in Geita district. Facilities at Nyegezi are good, but the quality of the teaching staff is inadequate to take full advantage of the Institute's potential. The standard of instruction in land planning at the Institute would be strengthened by the appointment of a qualified staff instructor. Assurances to this effect were obtained at negotiations.

Research and Land Planning

5.10 The Research and Land Planning Units to be established at the start of the Project would be located at Geita. Provision would be made for two expatriate professional staff in the Research Unit: an entomologist and an agronomist. Provision would also be made for two Tanzanian trainee professional officers. The team would be supported by 15 field assistants working on center and farm trials. The Planning Unit would be composed of a Senior Planning and Conservation Officer and team of 4 AFO's. Two further teams would be added as the Project progressed. The soil analytical laboratory at Ukiriguru would come under the direction of the Director of Research and Training at Ukiriguru in order to ensure that links with the stations' soil fertility research program would be maintained. For the first three years the soil analytical laboratory would be staffed with an expatriate Senior Analytical Chemist, a graduate chemist and 4 laboratory assistants; in the fourth year another graduate chemist and 4 assistants would be added.

Credit Allocation

5.11 TRDB would allocate short-term credit to cooperative societies on the final recommendations of Project extension staff. Allocation of inputs would be determined according to society estimates of members' requirements; these would be endorsed by the extension credit officers, who would also supervise distribution, carried out by NCU on behalf of TCA, to societies and fully developed Ujamaas. TRDB would be responsible for procurement and delivery of inputs to societies.

5.12 Societies with poor credit records would be required to show satisfactory improvement in management standards before its members would be permitted to enter the Project. Individual farmers who have defaulted on past loans would be excluded from the Project unless there were grounds for writing off the debt. Farmer credit applications would be endorsed for credit-worthiness by the applicant's Balozi, who would be advised on input needs by the extension staff. All farmers in the district would be required to register with the cooperative to which they would sell their cotton. Only cotton growers would also receive credit for maize inputs. Recovery of credit for both cotton and maize, including the cultivation credit for tractors, would

carried out by the cooperative society which, as at present, would deduct members' loan amounts from their cotton proceeds. The Regional Office of TRDB at Mwanza would issue credit to societies for the purchase of tractors only after Project staff had confirmed that all criteria had been met (para 4.09), and recovery would be effected by TRDB.

Road Construction

5.13 Recommendations as to the method of execution and supervision of the road construction to be carried out under the Project would be detailed in the road study (para 4.14). Assurances were obtained at negotiations that all local main roads, district roads and cotton tracks to be either improved or constructed as part of the Project would be maintained by the district Com-works organization.

Project Evaluation

5.14 The Evaluation Unit would be headed by an experienced agricultural economist, who would be supported by a statistical assistant in charge of data processing and a farm-survey officer. Initially, 2 data clerks and 2 senior enumerators would be permanently employed by the Unit, and provision would be made for the training and contract employment of enumerators. The Unit would be expanded by the recruitment of an additional senior enumerator and data clerk at the opening of Phase III of the Project.

VI. PRODUCTION, MARKETING AND FINANCIAL RESULTS

Yields and Production (Annex 13)

6.01 The average base yields for Project participants are 500 kg/ha of seed cotton (compared with a district average of 400 kg/ha), and 850 kg/ha of maize grain (compared with a district average of 550 kg/ha). Over an eight-year period it is assumed that a farmer's cotton yields would increase to 1,100 kg/ha, and that average maize yields would rise in two annual steps to 2,000 kg/ha. These increases are based on plot observations and take account of inter-year fluctuations caused by climate. Details of yield progressions are given in Annex 5. An average farmer would have 1.25 ha under cotton and 1.00 ha under maize, the current average areas in Geita district. Farmers who have consolidated their fields with those of neighbors and farmers in ujamaa villages are assumed to cultivate 1.50 ha of cotton and 1.25 ha of maize, as they would be assisted by mechanized land preparation and cultivation.

6.02 Production of cotton and maize on Project farms is estimated to increase as follows:

Year	Seed Cotton		Cotton Lint		Maize	
	Project Production	Project Av. Yield/ ¹	Project Production	Incremental Production	Project Production	Incremental Production
	m. tons	kg/ha	bales (181 kg)		m. tons	m. tons
0	18,100	500	33,000	-	24,600	-
3	22,000	600	40,100	7,100	34,500	9,900
6	33,700	800	62,400	29,400	59,300	34,700
9	41,600	1,000	75,800	42,800	66,500	41,900
12	44,900	1,070	81,900	48,900	69,200	44,600
15	46,100	1,100	84,000	51,000	69,300	44,700

¹ Weighted average of all Project farmers irrespective of period of participation.

Markets and Prices (Annex 12)

6.03 Tanzania currently produces about 400,000 bales of lint annually, of which the local textile industry uses about 50,000-60,000 bales, 12-15% of production. The rest is exported, and over half of this goes to Hongkong, Japan and the Republic of China. The Project would have no significant impact on world prices, as the incremental Project production of 51,000 bales would represent an increase of less than 0.1% of current world production. Cotton seed not retained for planting is crushed and the oil is sold on the domestic market; cake is exported to Europe. Surplus maize is marketed domestically. Although incremental maize production in the Project period would represent about 18% of present total sales, commercial demand is increasing at about 4.5% per annum, and there should be no difficulty marketing this additional volume.

6.04 By 1980 world lint prices expressed in 1973 constant dollar terms are expected to be around 29 US\$/lb c.i.f. Liverpool as compared with today's price of about 46 US\$/lb. In keeping with Government policy (para 2.07) prices to growers are expected to be maintained at Tsh 1.13/kg for AR (unstained cotton) and Tsh 0.60/kg for BR (stained cotton) throughout the period (Annex 12). The controlled internal price of cotton seed oil is above equivalent world prices. Although these are expected to decline by about 10% by 1980, and allowing for increased milling costs, TCA should be able to obtain at least Tsh 450 per ton for seed. The international price of maize is expected to decline from the high level caused by current world shortages in food grains; by 1980 the price is expected to be about US\$63/ton f.o.b. (Tsh 440). This is close to the equivalent farmgate price of Tsh 0.35/kg fixed by Government for

priority areas ^{1/}. For non-priority areas, including Geita, a price of Tsh 0.30/kg is set. These levels are expected to be maintained in the foreseeable future.

Government Budget and Foreign Exchange

6.05 The impact of the Project on the Government budget is shown in Annex 13. The Project would result in considerable increases in Government expenditure which would not be matched by revenues until after Year 12. By that time the maximum cumulative deficit in Government budget would be Tsh 60 million (US\$8.4 million). Revenues would benefit from export duties on cotton, the margin of interest on the IDA loan and income taxes levied on incremental incomes. Major imported Project items would not be subject to duty. A further contribution would come from indirect taxes on farmers' incremental consumption expenditure. The costs of the subsidy on cotton inputs would be offset by the export duty on incremental cotton lint production from the Project, and these costs would be fully recovered from Year 10 onward.

6.06 From 1985 onward the Project would result in an annual incremental production of cotton of nearly 50,000 bales, with a total value of US\$7 million on the world market. The annual net foreign exchange earnings would be nearly US\$3 million equivalent.

Farmer Benefits

6.07 Farm budgets for the three groups of farmers (para 4.03) are given in Annex 5. These budgets include subsidies on inputs for a maximum of five years, and these are then reduced in three equal stages. Maximum cotton yields would be obtained in the farmers' eighth year when, with no subsidy on inputs, net annual cash incomes would reach Tsh 1520. This would represent an increase of some 64% over pre-Project incomes (about Tsh 930) and a return on inputs of about 100%.

6.08 In the fifth year of the Project the value to farmers of incremental cotton production would be Tsh 12.7 million (US\$1.8 million) and after the tenth year of the program it would exceed Tsh 28 million p.a. (US\$4 million). The farmgate value of maize would be Tsh 8.5 million (US\$1.2 million) in the fifth year and Tsh 13 million p.a. (US\$1.8 million) from Year 10. The net annual per capita cash income of Project participants (exclusive of subsidy and assuming a family of five persons) would increase from an estimated US\$25 to US\$43, without affecting the subsistence production on the farm. Project benefits to farmers on ujamaa farms would be similar. The annual per capita income of Project farmers in Year 8 would be about US\$68, including subsistence valued at US\$25. At that time the per capita GNP in Tanzania is expected to be in the range of US\$120-130.

^{1/} Areas where maize is the major cash crop.

VII. ECONOMIC BENEFITS AND JUSTIFICATION

7.01 The Project would support Government's regional rural development program by (i) expanding the production of cotton which would increase the country's foreign exchange earnings, (ii) increasing maize production to meet the needs of the growing domestic market, and (iii) supplying essential infrastructure and social services in Geita district. The upgrading of the road network would reduce marketing costs, and would support the effort to provide a balanced system of transportation throughout the country. The health centers would help meet the projected requirements of the rural health system, and the community education centers would substantially augment existing facilities. Cash incomes of participating Project farmers would be increased by about 64%. The Project would provide a pattern for the intensification of production which could be adapted for use in other regions of Tanzania.

Economic Rate of Return

7.02 The internal economic rate of return of the Project is estimated at 14% over a 20-year period (Annex 14). In this calculation 50% of the costs of road construction and the road study were attributed to the Project, and the costs of schools and health facilities were omitted. Foreign exchange costs and earnings were shadow priced at Tsh 10.00 per US\$1.00 to reflect the economic value of foreign exchange to Tanzania (the official exchange rate is Tsh 7.14 per US\$1.00). The benefits attributed to road construction represent only the direct saving in running costs of cotton and maize vehicles, including savings from reduced distances travelled. Benefits to road users are not included as they are not expected to be significant.

Sensitivity Analysis

7.03 There are a number of factors which could adversely affect the outcome of the Project. (Annex 14) The most important of these are the rate of participation of the farmers, and their relative success in achieving yield increases with new inputs. The Project has been made flexible so as to minimize effects of delays in farmer participation, and, although typically sensitive to yield variations, the assumed rate and level of increase in yields is conservative. With the costs of schools and health facilities included the return would be 13%. If 100% of the costs of roads were included, the return would be 10%. A 10% drop in yields or prices would reduce the return to 7%, but a 10% increase in benefits would give a return of 21%.

Employment Benefits

7.04 There will be little direct employment benefits because the Project intensifies production on existing family units, but families would be more fully employed through the introduction of cooperative cultivation. A few additional jobs would be created in the ginning, oil-milling, and transporting sectors. The use of tractors will not be labor displacing, as they would assist with basic and timely land preparation - at present a severe constraint on improved yields.

Ecological and External Effects

7.05 The fertilizers and insecticides to be used in the Project would have only a small effect on the local ecology given normal precautions in their use. Endosulphan spray is toxic to humans and safety instructions should be included in all training. All hospitals and dispensaries in the district have already been issued treatment instructions. Potential erosion as land is consolidated would be controlled by laying out blocks on contours with the guidance of the land planning unit. Precautions would also be taken in the construction of roads to prevent erosion. The Evaluation Unit would monitor the environmental effects of the Project.

VIII. RECOMMENDATIONS

8.01 During negotiations agreement was reached on the following principal points:

- (a) Government would adequately staff the WRC to enable it to provide support for the Project and to help prepare the ground for future projects (para 2.12);
- (b) The necessary incentives to ensure farmer participation in the Project, including but not limited to the use of a subsidy program, would be established and maintained, and sufficient funds would be made available for this purpose (4.07);
- (c) Government would make available to TCA 25 ha of unoccupied land near Geita suitable for agricultural trials (para 4.15);
- (d) The Project would be granted priority in the use of the soil analytical laboratory (para 4.16);
- (e) Appropriate staff and medical supplies would be made available to the rural health centers (para 4.18(b));
- (f) Teachers and funds for recurrent expenditures would be made available to the community education centers (para 4.18(c));
- (g) Tractors, tillage equipment, fertilizers and insecticides, and ULV pumps and spares would be procured by international competitive bidding in accordance with Bank/IDA guidelines. In appraisal of bids local manufacturers would be allowed a preference margin of 15% or the existing rate of import duties, whichever is lower. Orders of less than US\$30,000 would be procured in accordance with Government procedures; orders would be bulked to the maximum extent possible. Due to their small size and the fact that they would be scattered over a wide area, construction of workshops, housing and other

buildings would be by force account or by local competitive bidding. The road study would be carried out by consultants chosen in accordance with IDA guidelines. Project roads would be constructed by contractors chosen after international competitive bidding. However, such roads may be constructed by force account or by contractors selected after local bidding as agreed with the Association following a review of the findings of the road study by Government and IDA (para 4.21);

- (h) Project accounts maintained by TCA and TRDB would be audited by auditors acceptable to IDA and Project accounts and auditors' reports would be submitted to the Association within six months of the close of the respective financial years (para 4.23);
- (i) Society accounts would be audited by the Registrar of Cooperatives within six months of the close of the financial year of each society (para 4.23);
- (j) An annual plan of operations detailing plans for Project execution would be drawn up by the Project Unit by 1st March of each year and agreed with the Association by 1st May of that year (para 5.01);
- (k) Appointment of a suitably qualified Project Manager, Deputy Project Manager and Accounts Officer would be made only after prior consultation with the Association (para 5.02);
- (l) Appointments to the posts of Chief Extension Officer, Chief Mechanization Officer and Chief Credit Officer would be made only after consultation with the Association (para 5.03);
- (m) Terms and conditions of service and transfer of all staff, whether seconded or newly recruited, would be finalized between Government and TCA and details would be furnished to the Association (para 5.07);
- (n) Diplomates from Ukiriguru and Moshi would be made available to the Project according to need (para 5.08);
- (o) The standard of instruction in land planning at the Nyegezi Training Institute would be strengthened by the appointment of a qualified staff instructor (para 5.09); and
- (p) All local main roads, district roads and cotton tracks to be either improved or constructed as part of the Project would be maintained by the district Comworks organization (para 5.13).

8.02 The Project would be suitable for an IDA credit of US\$17.5 million to the Government of Tanzania.

TANZANIAGEITA COTTON PROJECTUjamaa and TANUThe Ujamaa Village Program

1. Tanzania's socialist development policy is aimed at the simultaneous achievement of rapid economic growth and an egalitarian society. Perhaps one of the most important aspects of this policy is the increasing emphasis on agriculture and rural development, and in recent years the rural development strategy has focused on the establishment of cooperatives or ujamaa villages throughout the country. The immediate objectives are social and political - to foster a sense of self-reliance through self-help, to achieve equality of income, and to raise rural incomes in order to close the rural/urban gap and reduce the flow of people to the major towns. Government recognizes, however, that to be successful in these spheres, the strategy must be economically viable, and cooperative production - only possible with the new social attitude - is set as the final goal. The formation of ujamaa villages, which is one of the more conspicuous features of the execution of the policy, is important in those rural areas of Tanzania where the greatest progress towards ujamaa has been made so far. However, cooperative production can take place without any resettlement and, particularly in the most closely populated areas, will probably be developed on that basis.
2. The Prime Minister's Office is charged with the development of ujamaa villages. A Rural Development Division coordinates with TANU (the political party organization) and other executive Ministries, and is responsible for continuous evaluation of ujamaa operations. The standardization of reporting and assessment of economic performance is still poor but these problems are receiving close attention. Technical support is given by other Ministries, especially the Ministry of Agriculture at Kilimo.
3. It is difficult to gauge progress with ujamaa in quantitative terms, because this is marked by the acceptance of a cooperative attitude to working and living as well as by the economic success in production. The latter is only now being evaluated by the Tanzanians. A count of ujamaa villages and the population involved in them is some guide to progress, but village formation is reported in three stages and the first, unspecific, stage which dominates the statistics tends to be overestimated in spite of efforts to improve reporting. Estimates of population in villages may also be high due to double counting. Subject to these reservations, Table 1 shows progress with village formation. In April 1971, 17 villages had been registered with the Registrar of Cooperatives and were accepted as being in Stage III; by October 1971 this total had risen to about 40, and in December 1972, 315 villages had been registered.

4. The stages in ujamaa development, based on sources of finance open to villages, are:

- (a) A formative stage during which resettled villages require financial aid for activities such as clearing bush, access road construction, and purchase of initial equipment. In practice, they often also need food, which cannot always be raised locally. At this stage the Regional Development Funds are the major source of assistance. Villages that are members of primary marketing cooperatives also receive the same servicing facilities as individual members.
- (b) A growing stage in which the village members learn to live and work together, putting increasingly more of their work effort into commercial crops and activities. The village has a workable constitution, and when it has become economically viable registers as an Agricultural Association. Credit may then be obtained from the Tanzania Rural Development Bank (TRDB).
- (c) The final, mature, stage is when the ujamaa village registers with the Registrar of Cooperatives. It may become a full multi-purpose cooperative society, and would have adequate security to attract commercial credit. The assessment of when this stage is reached is carried out by the local Cooperative Officer, Agricultural Officer, and TANU secretary.

5. In the early years of ujamaa development, over-zealous officials exerted pressure on farmers to form villages. The basic principle of Ujamaa formation was thus transgressed, i.e., that it take place on the un-coerced initiative of members. This policy of coercion has been abandoned for some years, but there have been signs of undue persuasion again being used, almost certainly without the approval of central policy makers. Table 1 also contains evidence that the three-stage approach is being short-circuited in some areas and that ujamaas are registered without first going through a learning period. This has clearly happened in the Coast, Dodoma and Iringa Regions and to a lesser extent in Mara, Mwanza and Shinyanga, where the number of registered villages in December 1972 greatly exceeded those in Stage II 18 months earlier. It is desirable that only viable ujamaa villages incur major debts such as the tractor and input loans in this Project. It is assumed that only about 70 villages could reach this stage in the Project period.

6. Progress with ujamaa village formation varies considerably by region. The differences reflect both the variety of motives for the formation of villages, and the social and geographical conditions of the areas. The greatest development has been close to the boundary with Mozambique where the dominant motivation has been defense. Elsewhere the largest number of villages are in areas which have limited involvement in the cash

economy, are sparsely populated, and have a harsh environment. These include Dodoma and Kigoma where there has been a concentration of planning effort and technical assistance. It is in these areas where the concept of physical movement into concentrated villages (probably located on a new water supply), and the introduction of new crops (necessitating rather intensive technical guidance, modern inputs and credit) is a particularly appropriate approach. Because of the real need for services, and the flexibility which available land presents, these areas will probably accept ujamaa most readily.

7. Progress in numbers has been noticeably slower in two types of areas. These are: (i) the densely populated highland areas where individually owned land is under coffee, tea or bananas (such as in Kilimanjaro, Bukoba and Rungwe districts) and where ujamaa will be based on cooperative work on existing crops and is unlikely to involve any resettlement; and (ii) generally less densely populated areas with established cash crops such as cotton, tobacco, and cashew. These are drier regions than the highlands, with more extensive cultivation and marked seasonal peak labor requirements (traditionally met by hiring). Technical and social problems seem particularly likely in the cotton area around Lake Victoria, including Geita, where an individualistic attitude, typical of first-generation settlers exists. An unhurried approach to ujamaa seems especially appropriate in these areas.

8. The economic justification for communal farming rests on the greater production arising from economies of scale and division of labor, and the more economical (and therefore increased per capita) provision of Government services such as extension advice, water supplies, schools and dispensaries. The case for economies of scale is based on (i) sharing bulk orders of inputs and group marketing; (ii) making more efficient use of labor and hand or powered implements, enabling a greater area to be cultivated; (iii) allowing specialization of function, such as herding and tool repair in the village; and (iv) enabling wider access to and acceptance of yield-increasing technical advice. The channelling of agricultural credit can be facilitated by cohesive ujamaa units, as can the economic distribution of packages of inputs supported by extension services. Potentially, ujamaa villages would extend the coverage of cooperative marketing organizations, but until they reach a sufficient size to provide marketing services economically, ujamaa villages would be members of existing cooperative societies. A further argument for ujamaa villages is that a group of farmers will accept an innovation to which individuals are indifferent. However, there is a lack of empirical evidence on where economies of scale are achievable in commercial production; the optimum scale of different operations is not known, but it is clear that radical changes are needed in farm management as production becomes increasingly communal and is carried out on a larger scale. A well-trained extension service familiar with or trained in decision making on large farms then becomes a necessity.

9. These management changes will be particularly required for crops like tobacco with a high management requirement, and crops such as cotton which have a high pay-off from timely operations, and are typically included in a rotation with food crops. The application of ujamaa principles to cotton growing, particularly with mechanization, calls for major changes in farm management techniques. These would include new rotations and crop proportions, introduction of minimum tillage techniques, intensification of cultivation from use of sprays and fertilizers, and possibly changes in picking and sorting. Mechanization needs to follow intensification and a reorganization of landholdings. It cannot economically be imposed on the existing low-yield system.

10. Difficulties within villages - which are likely to be a continuing concern - are the lack of leadership and management skills among village members, and problems of measuring the share of communal production which is due of the individual. The former can be helped by planning, training, and assistance from extension services. The most important factor is to ensure that ujamaa villages develop from the desire of the people and at a pace at which they can absorb the new ideas and techniques essential for viable communal production.

TANU

11. The mobilizing force in ujamaa development has been the political party, TANU. Organized down to cells of ten families, TANU reaches the grass-roots of the rural areas, and in its pyramid structure rising through village development committees and ward organizations provides a hierarchy for channelling both policy decisions and local opinions. At the village level it provides a forum within which a group of farmers can debate possible cooperation through which technical and planning advice (e.g., on site selection, crops, planting areas) can be channelled, and through which farmers' problems and wishes can be passed to the party and Government.

12. The unpaid leader of the 10-family cell, known as the 'Balози', is a TANU member elected by party members of the cell. It is his job to keep records of the cell membership, collect dues from party members, and pass on political and policy information to the cell. He is also to keep the party leadership and--through TANU--the Government informed on local problems. The Balози tries to settle local disputes which otherwise would go to the courts. The position is primarily political, but with Party and development matters so closely linked, the Balози obviously fills an economic role as well. A Balози may become the chairman of an Ujamaa village formed in his area only if the villagers consider his technical knowledge adequate for the post. Although the 10-cell system has not been working uniformly well, partly because the duties of the Balози have become over-burdensome, it does provide the most effective two-way channel for information available. The use of the Balози within the Project would bring about the closer identification of the Party with local development efforts, an end which is highly desirable.

October 10, 1973

TANZANIAGEITA COTTON PROJECTThe Tanzania Rural Development Bank (TRDB)Resources of TRDB

1. TRDB has an authorized capital of Tsh 100 million, divided in 100 equal shares, to be subscribed exclusively by the Government. The initial subscribed share capital of Tsh 25 million, representing the tangible assets transferred from NDCA (TRDB's predecessor), was raised through successive Government contributions and finally reached Tsh 47 million by the end of 1972. General reserves as of December 31, 1972 were about Tsh 0.7 million, as compared to about 1.7 million at the end of the previous year. This reduction was mainly due to the loss of almost Tsh 1 million recorded for the half-year ending December 1972.

2. Other resources of TRDB comprise short-term deposits of Tsh 26.2 million, 1/ as well as medium and long-term loans totalling approximately Tsh 37 million. Beside a number of IDA credits, the latter include a National Bank of Commerce overdraft of Tsh 3.3 million, loans from SIDA for grain storage facilities and trucks, and a loan from the ICO for the local purchase of seasonal inputs. The bulk of TRDB's funds available for lending to date have originated from the five IDA credits extended to Tanzania for agricultural projects over the last seven years.

<u>Credit No.</u>	<u>Purpose</u>	<u>Date of Credit Agreement</u>	<u>Credit Amount (US\$ million)</u>	<u>Amount disbursed as of Feb. 28, 1973 (US\$ million)</u>
80-TA	General Agriculture Credit	Jan. 1966	5.00	5.00
132-TA	Beef Ranching Development	Oct. 1968	1.30	1.20
217-TA	Small Farmer Flue-Cured Tobacco	Oct. 1970	9.00	0.55
287-TA	Smallholder Tea	Mar. 1972	10.80	0.65
382-TA	Livestock Development	May 1973	18.50	-
	Total		44.60	7.83

As of December 31, 1972, IDA funds represented almost 80% of TRDB's medium and long-term liabilities with a total of Tsh 28.5 million.

1/ Including Tsh 20 million reserved by the Lint and Seed Marketing Board for cotton purchases.

3. TRDB is also expected to receive special funds from the Government, bearing the name of "soft window", to be administered separately from ordinary capital resources and used for the purpose of extending loans on concessionary terms to finance special development projects. To date, this procedure has not been used by TRDB.

Lending Operations

4. TRDB provides short and medium-term loans generally at an interest rate of 8-1/2% and long-term loans at 7-1/2%. Maturities are usually based on the productive capacity and estimated life of the assets to be financed and a rough distinction can be made between the following categories:

- (a) Short-term loans for agricultural inputs due for repayment within 12 months from the date of disbursement.
- (b) Medium-term loans repayable over a period of five years. These loans are mainly for farm implements and machinery, trucks, piggeries, poultry farms, fishing boats and equipment and small-scale industries.
- (c) Long-term loans with a maturity of up to 15 years. These cover major investments such as produce godowns, buildings, coffee pulperies, tea factories, ranches, etc.

5. As a matter of policy, TRDB does not normally finance more than 75% of total project cost and a loan for any single project should not exceed 10% of the Bank's net worth. Eligible borrowers are mainly the Cooperative Union and Societies, the District Development Corporations, the Ujamaa villages and registered associations. Crop financing remains the prerogative of the National Bank of Commerce and the various agricultural produce Marketing Boards.

6. TRDB's outstanding loans as of December 31, 1972 amounted to Tsh 134 million, of which 121 million or 90% were with Cooperative Societies. The composition of the outstanding cooperative loan portfolio at the time was as follows (Table 1):

Short-term loans	:	Tsh 69 million or 57%
Medium-term loans	:	Tsh 34 million or 28%
Long-term loans	:	Tsh 18 million or 15%

Short-term loans cover seasonal inputs for a number of crops; tobacco, tea, coffee, and cotton currently represent about 95% of the short-term outstanding portfolio. Tobacco is by far the most important crop for TRDB with a share of about 40%. The medium-term loan portfolio is heavily geared toward vehicles (usually trucks), which account for almost 85% of the medium-term

funds outstanding, and the remainder is equally shared by tractors and spray equipment. Long-term loans in the past have mainly been for the construction of godowns, buildings, coffee pulperies, tea factories and coffee rehabilitation. These items represented about 85% of the long-term outstanding portfolio at the end of 1972.

7. Four of the eighteen regions - Iringa, Tabora, Mbeya and Mwanza - currently hold almost 60% of the total outstanding loan portfolio, while other regions such as Central, Kigoma and Morogoro are hardly represented at all. Investments from IDA funds represent about 20% of the total amount outstanding and are largely in the form of short-term loans for tea, coffee and cotton inputs.

Arrears Situation and Credit Recovery

8. The accumulation of overdues has been a constant feature of TRDB's operations over the last three years, and at the end of December 1972, these amounted to Tsh 35.6 million, or 26.5% of the loan portfolio. This situation arose mainly from bad debts on medium and long-term loans inherited by TRDB from its predecessors; overdues on the loans extended by TRDB itself were only 7% of the outstanding amount in February 1973.

9. Pursuant to IDA's request that a statement of measures to reduce the amount of arrears be prepared, TRDB recently submitted a detailed proposal for rescheduling and writing off a number of bad debts. The proposal received IDA's approval and loans amounting to Tsh 9.9 million were rescheduled, while a balance of Tsh 4.4 million was written off. This, combined with a large collection of overdues totalling Tsh 7.2 million during the first quarter of 1973, reduced total arrears to Tsh 11.3 million (that is, 9% of the new outstanding portfolio), fully covered by the provision for bad debts.

10. Along with the above measures, TRDB expressed its intention to improve credit recovery in the future. This would be achieved through a series of measures including claims against stocks held by the delinquent unions, repossession of vehicles, seizure of cattle, etc. In some cases, TRDB would seek to obtain a lien on crop sales to the National Agricultural Product Marketing Board (NAPB) or on fees paid by NAPB to the Unions for the rental of godowns. TRDB also plans to take court action against societies which refuse to pay in spite of their good liquidity position. The determination of TRDB to recover its overdues is beyond doubt, but its success hinges upon the backing which the Government will be willing to provide.

Organizational Structure and Management

11. The major element affecting TRDB's structure has been the regionalization of the country. TRDB's former 58 field offices were replaced by 18 regional offices, each having a regional representative and

a credit supervisor. The responsibilities of the new regional offices include pre-investment studies, project appraisal and supervision, technical assistance and the maintenance of permanent contacts with borrowers, regional representatives of Ministries and branches of the National Bank of Commerce. As a result of this reorganization, the operations of TRDB will undoubtedly gain in effectiveness, and some improvements in credit recovery may be expected. On the other hand, the staffing and operation of such offices will be an additional burden on TRDB's already strained financial resources, since the regional allocation of staff has been made irrespective of the nature of the Bank's involvement in any given region. The overall increase in staff was from 90 before the regionalization to about 180 today. A recent development, which should have a positive bearing on TRDB's future operations, was the appointment of six UNDP specialists who will reinforce Management's skill in a number of key areas: namely farm management, rural credit, marketing, livestock and agricultural machinery. All six specialists have now joined TRDB and are expected to play a key role in project appraisal.

12. A number of changes are currently taking place within the financial management of the Bank. Effective December 1973, the functions of the Financial Analyst, a post held to date by an expatriate, will be taken over by local staff. The qualifications of the candidate proposed for replacement, whose responsibilities will include the administration of IDA credits, appear satisfactory. He will be assisted by an Assistant Financial Analyst whose main function will be to assess the creditworthiness of TRDB's clients and to advise Management on lending decisions.

13. In general, the senior staff of TRDB appears dedicated and qualified in their respective positions. The only field in which an obvious weakness appears is procurement. TRDB has had difficulties in the past in preparing procurement documents and delays have resulted. Also, substantial managerial time has been diverted into such activities at the expense of the more fundamental functions to be performed by Management. It is therefore recommended that an expatriate procurement specialist be appointed and an appropriate provision has been made in the credit to cover the related expenses for a period of five years.

Future Prospects of TRDB

14. In view of the recent measures taken by TRDB to reduce arrears, improve credit recovery and reinforce its appraisal capacity, future prospects appear quite favorable. Financial projections prepared by Management for the 1973-77 period indicate that TRDB expects to operate at a substantial profit in the future.

September 15, 1973

TANZANIA

GEITA COTTON PROJECT

Farming Situation in Geita District at End of 1972
Breakdown by Project Area

	<u>Population</u> ^{2/}	<u>Number of Farms</u> ^{3/}	<u>Number of Coop. Societies</u>	<u>Number of Coop. Members</u>	<u>Number of Cotton Farms</u> ^{4/}	<u>Cultivable Land</u> ^{5/} (ha.)	<u>Cultivated Land</u> ^{5/} (ha.)	<u>Area under Cotton</u> ^{6/} (ha.)	<u>Area under Maize</u> ^{7/} (ha.)	<u>Seed Cotton Production (tons)</u>			<u>Maize Production (tons)</u>
										<u>AR</u>	<u>BR</u>	<u>Total</u>	
Phase I Area ^{1/}	163,900	27,320	31	11,640	25,950	-	-	32,440	34,150	11,408	1,466	12,874	18,780
Phase II Area ^{1/}	117,900	19,650	31	12,840	18,670	-	-	23,340	24,560	9,188	952	10,140	13,510
Phase III Area ^{1/}	145,100	25,230	46	21,960	23,970	-	-	29,960	31,540	10,292	1,090	11,382	17,350
<u>Total District</u>	<u>426,900</u>	<u>72,200</u>	<u>108</u>	<u>46,440</u>	<u>68,590</u>	<u>400,000</u>	<u>383,000</u>	<u>85,740</u>	<u>90,250</u>	<u>30,888</u>	<u>3,508</u>	<u>34,396</u>	<u>49,640</u>

^{1/} Includes following sub-divisions: Phase I Area: Bulela, Ihamilo, Bukoli, Nyangwale, Mwingiro, Kakora, Karumwa, Bukwimba, Kalangalala.
Phase II Area: Bugando, Butundwe, Busanda, Kahunda, Sima.
Phase III Area: Kazunzu, Nyakaliro, Kasenyi, Bukura, Kasungamile, Nyamatongo, Kome.

^{2/} Calculated from 1967 Census figures by applying growth rates of 3% in Phase I and II Areas and 2.5% in Phase III Area. Corresponding average growth rate for the District is 2.8%.

^{3/} Calculated on the basis of average household sizes identical to those appearing in 1967 Census, i.e. 6 for Phase I and II Areas and 5.75 for Phase III Area, yielding an average of 5.9 for the District.

^{4/} Taken as 95% of total number of farms. Cotton farms as referred to here also grow maize in rotation with cotton. On those farms, areas respectively under cotton and maize are considered identical.

^{5/} Mission Estimates.

^{6/} Assuming an average of 1.25 ha. of cotton per cotton growing farm.

^{7/} Assuming an average of 1.00 ha. under maize on all farms in the District.

Sources: - 1967 Population Census.
- District Agricultural Department
- Mission Estimates.

May 2, 1973

TANZANIA
OETA COTTON PROJECT
Expected Project Build-Up

PROJECT YEAR CROP SEASON	Y0 1973/74	Y1 1974/75	Y2 1975/76	Y3 1976/77	Y4 1977/78	Y5 1978/79	Y6 1979/80	Y7 1980/81	Y8 1981/82	Y9 1982/83	Y10 1983/84	Y11 1984/85
PHASE I AREA^{1/} (27530 cotton/maize farms)^{2/}												
Number of Project participants	550	2,200	4,960	8,260	11,010	11,010	11,010	11,010	11,010	11,010	11,010	11,010
Percentage of ultimate Project participants ^{3/}	5%	20%	45%	75%	100%	-	-	-	-	-	-	-
Consolidated Project Farms ^{4/ 5/}												
Number of farms	55	280	770	1,600	2,700	3,800	4,900	6,000	7,100	8,200	9,300	9,300
Area under cotton (ha)	80	420	1,160	2,400	4,050	5,700	7,350	9,000	10,650	12,300	13,950	13,950
Area under maize (ha)	70	350	960	2,000	3,375	4,750	6,130	7,500	8,880	10,250	11,625	11,625
Total area cultivated (ha)	330	1,680	4,620	9,600	16,200	22,800	29,400	36,000	42,600	49,200	55,800	55,800
Non-consolidated Project Farms^{5/}												
Number of farms	495	1,920	4,190	6,660	8,310	7,210	6,110	5,010	3,910	2,810	1,710	1,710
Area under cotton (ha)	620	2,400	5,240	8,320	10,390	9,010	7,640	6,260	4,890	3,510	2,140	2,140
Area under maize (ha)	500	1,920	4,190	6,660	8,310	7,210	6,110	5,010	3,910	2,810	1,710	1,710
Total area cultivated (ha)	2,430	9,600	20,950	33,300	41,110	36,050	30,550	25,050	19,550	14,050	8,550	8,550
Total Phase I Area												
Project area under cotton (ha)	700	2,820	6,400	10,720	14,440	14,710	14,990	15,260	15,540	15,810	16,090	16,090
Project area under maize (ha)	570	2,270	5,150	8,660	11,685	11,960	12,240	12,510	12,790	13,060	13,335	13,335
Total Project area cultivated (ha)	2,810	11,280	25,570	42,900	57,750	58,850	59,950	61,050	62,150	63,250	64,350	64,350
PHASE II AREA^{1/} (14800 cotton/maize farms)^{2/}												
Number of Project participants			400	1,980	4,750	7,130	7,920	7,920	7,920	7,920	7,920	7,920
Percentage of ultimate Project participants ^{3/}			5%	25%	60%	90%	100%	-	-	-	-	-
Consolidated Project Farms ^{4/ 5/}												
Number of farms			40	240	710	1,430	2,120	3,010	3,800	4,590	5,370	6,180
Area under cotton (ha)			60	360	1,070	2,150	3,330	4,520	5,700	6,890	8,090	9,270
Area under maize (ha)			50	300	890	1,790	2,780	3,760	4,750	5,740	6,730	7,730
Total area cultivated (ha)			240	1,440	4,260	8,580	13,320	18,060	22,800	27,540	32,340	37,080
Non-consolidated Project Farms^{5/}												
Number of farms			360	1,740	4,040	5,700	5,700	4,910	4,220	3,330	2,530	1,740
Area under cotton (ha)			450	2,180	5,050	7,130	7,130	6,140	5,150	4,160	3,160	2,180
Area under maize (ha)			360	1,740	4,040	5,700	5,700	4,910	4,220	3,330	2,530	1,740
Total area cultivated (ha)			1,800	6,700	20,200	28,500	28,500	24,550	20,600	16,650	12,650	8,700
Total Phase II Area												
Project area under cotton (ha)			510	2,540	6,120	9,280	10,460	10,660	10,850	11,050	11,250	11,450
Project area under maize (ha)			410	2,040	4,930	7,490	8,480	8,670	8,870	9,070	9,270	9,470
Total Project area cultivated (ha)			2,040	10,140	24,460	37,080	41,820	42,610	43,400	44,190	44,990	45,780
PHASE III AREA^{1/} (25480 cotton/maize farms)^{2/}												
Number of Project participants				500	3,020	6,550	9,060	10,070	10,070	10,070	10,070	10,070
Percentage of ultimate Project participants ^{3/}				5%	30%	65%	90%	100%	-	-	-	-
Consolidated Project Farms ^{4/ 5/}												
Number of farms				50	350	1,000	1,910	2,920	3,930	4,940	5,940	6,950
Area under cotton (ha)				80	580	1,590	2,860	4,380	5,900	7,410	8,910	10,430
Area under maize (ha)				60	440	1,250	2,390	3,650	4,910	6,180	7,430	8,690
Total area cultivated (ha)				300	2,100	6,000	11,460	17,520	23,580	29,640	35,640	41,700
Non-consolidated Project Farms^{5/}												
Number of farms				450	2,670	5,550	7,150	7,150	6,140	5,130	4,130	3,120
Area under cotton (ha)				560	3,480	7,460	9,940	11,660	13,380	15,100	16,820	18,540
Area under maize (ha)				450	2,670	5,550	7,150	7,150	6,140	5,130	4,130	3,120
Total area cultivated (ha)				2,250	13,350	27,750	35,750	35,750	30,700	25,650	20,650	15,600
Total Phase III Area												
Project area under cotton (ha)				640	3,860	8,440	11,800	13,320	13,580	13,820	14,070	14,330
Project area under maize (ha)				510	3,110	6,800	9,540	10,800	11,050	11,310	11,560	11,810
Total Project area cultivated (ha)				2,550	17,450	33,750	47,210	53,270	54,280	55,290	56,290	57,300
TOTAL DISTRICT (76,600 cotton/maize farms)^{2/}												
Number of Project participants	550	2,200	5,360	10,740	18,780	24,690	27,990	29,000	29,000	29,000	29,000	29,000
Consolidated Project Farms ^{4/ 5/}												
Number of farms	55	280	810	1,890	3,760	6,230	9,030	11,930	14,830	17,730	20,630	22,430
Area under cotton (ha)	80	420	1,220	2,840	5,340	9,350	13,950	22,250	28,600	35,900	43,650	43,650
Area under maize (ha)	70	350	1,010	2,360	4,700	7,790	11,300	14,910	18,540	22,170	25,790	25,790
Total area cultivated (ha)	330	1,680	4,860	11,340	22,360	37,380	54,180	71,580	88,980	106,380	123,780	134,580
Non-consolidated Project Farms^{5/}												
Number of farms	495	1,920	4,550	8,850	15,020	18,460	18,960	17,070	14,170	11,270	8,370	6,570
Area under cotton (ha)	620	2,400	5,650	11,260	18,780	23,080	23,700	21,340	17,720	14,080	10,460	8,220
Area under maize (ha)	500	1,920	4,550	8,850	15,020	18,460	18,960	17,070	14,170	11,270	8,370	6,570
Total area cultivated (ha)	2,480	9,600	22,750	44,250	75,110	92,300	94,800	85,350	70,850	56,350	41,850	32,850
Total District												
Project area under cotton (ha)	700	2,820	6,910	13,900	24,420	32,430	37,250	39,240	39,970	40,680	41,410	41,870
Project area under maize (ha)	570	2,270	5,560	11,210	19,720	26,250	30,260	31,980	32,710	33,440	34,160	34,620
Total Project area cultivated (ha)	2,810	11,280	27,610	55,590	97,660	129,680	148,980	156,930	159,830	162,730	165,630	167,430
Total number of non-consolidated farms ^{5/}	76,550	76,330	75,790	74,710	72,840	70,370	67,570	64,670	61,770	58,870	55,970	54,170
Total area cultivated (ha)	383,000	383,200	383,800	384,900	386,800	389,200	392,000	394,900	397,800	400,700	403,600	405,400

^{1/} For definition of project phase areas, see Annex 3, footnote 1.

^{2/} Derived from Annex 3 by applying over 72/73-74/75 period past population growth rates (Annex 3, footnote 2) to number of cotton farms. Number of farms is kept same in following years for land saturation has virtually been reached by them (about 400,000 ha of cultivable land in the district).

^{3/} Ultimate number of participants taken as 40% of total number of cotton farmers.

^{4/} Increment in any given year assumed as 10% of farms participating in scheme in that year.

^{5/} The area under crops for an average farmer would be as follows

	Non-consolidated farm (ha)	Consolidated farm (ha)
Cotton	1.25	1.50
Maize	1.00	1.25
Food crops	0.25	0.25
Fallow/cassava ...	2.50	3.00
Total ...	5.00	6.00

It is assumed that consolidation brings a new 0.20 ha into cultivation for every existing ha consolidated.

TANZANIAGEITA COTTON PROJECTProduction and Improvement of Cotton and MaizeA. Production

1. Cotton has the highest potential for absolute growth of any agricultural product in Tanzania. Production is, however, extremely variable. In the year of peak production (1965/66), total output reached 436,000 bales; this level was approached in 1969/70, another year of exceptionally favorable weather, when production reached 423,000. Average production over the past ten years has, however, been well under 400,000 bales. Production increases can be expected in the future as the result of both increased area and improved cotton yields. As there is little new land available, most of the increase in area will have to come about as farmers who have recently shifted from cotton production into rice and maize return to cotton growing. Yield increases will come about from use of new seed varieties, application of fertilizer and spray and improved management. As Tanzania is only marginally suitable for cotton growing, returns on increased inputs would be sufficiently attractive to induce their introduction only where farmers demonstrated superior husbandry. Especially important considerations would be good land preparation, timely planting and adequate weeding. The coverage and quality of the extension staff available would also be important. The introduction of mechanized cultivation would improve crop husbandry by helping to overcome seasonal labor shortages and allowing more efficient land preparation and weeding. With the estimated increase in cotton area and with the increased yields from improved inputs, it is estimated that annual cotton production would rise to about 540,000 bales in 1974. Variations in weather conditions could, however, cause wide disparities in annual production.

2. In the Western Cotton Growing Area cotton is grown under diverse climatic and soil conditions. Altitudes in this area range from 1,000 to 1,250 m - near the upper altitude limit of 1,300 m for cotton. This means that optimal yields obtainable under these ecological conditions will be less than those obtainable at lower altitude and warmer temperatures. Research at Ukiriguru has been directed towards finding a cotton variety well suited to the rainfall pattern of the area and which would be resistant to insect attack, bacterial blight and Fusarium wilt. Detailed recommendations are not available as to fertilizer rates and spraying regimes for all climatic conditions prevailing throughout the Western Cotton Growing Area. However, the table below demonstrates a simplified account of improvements in yields which can be expected in Geita district.

(a) <u>No inputs but with:</u>	<u>% increase in yield</u>
early sowing	25
correct spacing	15
clean weeding	<u>15</u>
Possible increase with no inputs	<u>55%</u>
 (b) <u>Good husbandry plus inputs:</u>	
Spraying	67
Fertilizer	<u>33</u>
Increase due to inputs	<u>100%</u>

3. Maize is the staple food of the rural population and the most important cereal in the country. Only a small proportion of the crop passes through official marketing channels, and this residual therefore fluctuates widely. Maize not used for on-farm consumption is sold to the National Agricultural Products Board (NAPB) at prices set by Government. The stated objective of Government maize policy is to maintain domestic self-sufficiency and provide an even, low cost supply for the commercial market. Government is therefore attempting to establish sufficient stocks to cover random fluctuations in supply. Maize production is particularly responsive to improved inputs, and the highest potential for increased output is through the introduction of high-yielding hybrids and through the increased application of fertilizer.

B. Input Recommendations

Cotton Inputs

4. Fertilizer and insecticide would be applied to cotton planted by mid-December at recommended spacing.

5. Fertilizer. The current recommendations for fertilizer would be followed initially. These are:

125 kg/ha sulphate of ammonia
50 kg/ha triple super-phosphate

Both would be applied as a basal dressing. This blanket recommendation would be modified for different soil types in the Project area as the work of the soil analytical laboratory makes more precise recommendations possible and as the fertility of the soils changes over time. A compound would be used. The blanket recommendation has been retained for budgeting purposes.

6. Insecticide. It is proposed that insecticidal material would be applied with Ultra Low Volume (ULV) sprayers, a technique introduced into Geita district in 1972/73. The currently approved regime is six applications of 2.5 liters/ha of oil-based endosulphan, applied at two-weekly intervals from first flowers (late February). An alternative spray of carbaryl, for protection against sucking pests, may be needed in some years. The battery-powered sprayers would last two seasons and would be shared by three neighboring farmers (this is feasible due to the speed of application compared with conventional low volume spraying).

7. Existing formulations and application rates are used throughout in the budgets. However, changes in the formulation and type of insecticide are likely during the Project period. The use of water-based sprays with ULV applicators is at an advanced stage of research in Eastern Africa and would be the subject of adaptive research in the Project. A water-based DDT formulation would result in significant cost savings. Further cost savings and marginal yield increases are possible by reducing the number of spray applications and making the remaining ones more effective by improving timing, both on the basis of a program of egg-counts of pests on cotton. Research on a scouting program which would facilitate changes in the spray regime would also be part of the Project's crop-research program. Scouting would be carried out by extension staff employed under the Project. No allowance for these cost savings has, however, been made in the budgets.

Maize Inputs

8. Maize yields would be raised by the introduction of improved seed, and the application of fertilizer and insecticidal dust to early planted material.

9. Seed and Fertilizer. Composite seed supplied by the Tanzania Seed Co. would be made available to Project farmers. The initial fertilizer recommendation for the area would be:

100 kg/ha sulphate of ammonia
50 kg/ha triple super-phosphate

This would be varied in the light of experience on some soils where phosphate would probably be replaced by an additional dressing of nitrogen.

10. Dusting. Control of stalk-borer with 5% DDT dust is essential. Although two or even three applications may sometimes be needed, an average of one application has been budgeted.

11. Project input requirements for both cotton and maize are given in Table 1.

C. Farm Budgets

12. Farm budgets for both consolidated and unconsolidated Project farmers are given in Tables 2 and 3.

Cotton

13. Yields. The average yield of seed cotton in Geita district is estimated to be 400 kg/ha, but there is considerable variation between farmers in any one year and from year to year. For Project farmers selected on the basis on their current husbandry standards and their receptivity to advice, it is anticipated that the average starting yield will be about 500 kg/ha, and over 90% of these farmers will start with yields above the district average (Annex 11). It is assumed that yields will increase at a decreasing rate over a period of eight years as farmers master the use of new inputs. The yield assumptions are shown in the two farm budgets. After the first five years of development in each phase, the input subsidy of 50% on fertilizers and spray materials would be removed in three annual steps.

14. Prices and Grades. Current prices to growers and outturns for seed cotton are:

AR 85%, Tsh 1.13/kg
BR 15%, Tsh 0.60/kg
Average: Tsh 1.05/kg

The cotton price is fixed by Government and in spite of expected reductions in world prices of cotton lint it is anticipated that prices to growers in Tanzania will be maintained at the current level (Annex 12), by use of the Price Assistance Fund. The introduction of regular spraying should reduce the proportion of stained cotton sold by Project farmers. The following prices and outturns are assumed in the budgets:

AR 90%, Tsh 1.13/kg
BR 10%, Tsh 0.60/kg
Average: Tsh 1.08/kg

Maize

15. Yields. The average yield of unimproved maize in Geita district is probably no more than 550 kg/ha, and for the better farmers who would enter the Project it is estimated at about 850 kg/ha. With composite seed, fertilizer and DDT dressing farmers should rapidly achieve yields in the region of 2,000 kg shelled maize/ha, and with further dressings higher yields are possible. For budget purposes it has been assumed that Project farmers will take two years to reach 2,000 kg/ha and will stay at that level.

16. Prices. Until 1972 the "into-store" price payable by NAPB for maize was fixed by Government: the producer price was the into-store price less a variable level of costs and levies deducted by the Cooperative Unions and Societies who act as agents for NAPB. In 1972/73 the NAPB into-store price of Tsh 390.00 per metric ton yielded producers Tsh 0.26/kg in the Geita area. A new policy of fixing producer prices has been introduced: for 1973/74 that for Geita district and other 'non-priority' areas is Tsh 0.30/kg and for 'priority' areas it is Tsh 0.35/kg. World maize supplies and prices have been extremely volatile in recent years, and this tendency has been especially marked in Eastern and Central Africa. In real terms, however, prices are anticipated to average close to 1972 world market levels (about US\$54/ton f.o.b. Gulf Ports) over the next decade. This is close to Tsh 300/ton at farmgate, the price that has been assumed in the budgets.

October 10, 1973

TANZANIA

GETITA COTTON PROJECT

Input Requirements under Project -- Breakdown by Phase ^{1/}

PROJECT YEAR	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11
CROP SEASON	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85
<u>PHASE I AREA</u>												
Sulfate of Ammonia (tons)		580	1,315	2,206	2,974	3,035	3,098	3,159	3,222	3,282	3,345	3,345
Triple super-phosphate (T.S.P.) (tons)		255	578	969	1,306	1,334	1,362	1,389	1,417	1,444	1,472	1,472
Cotton Spray Endosulphan (000 liters)		42	96	161	217	221	225	229	233	237	241	241
D.D.T. Dust (tons)		11	26	43	58	60	61	63	64	65	67	67
Maize Seed (tons)		57	129	217	292	299	305	313	320	327	333	333
Cotton Sprayers												
Total number of sprayers in operation	187	752	1,707	2,859	3,851	3,923	3,998	4,070	4,144	4,216	4,291	4,291
Number of sprayers purchased		565	1,142	1,717	2,134	1,789	2,209	1,861	2,283	1,933	2,358	1,933
<u>PHASE II AREA</u>												
Sulfate of Ammonia (tons)				522	1,258	1,909	2,156	2,200	2,243	2,288	2,333	2,378
Triple super-phosphate (T.S.P.) (tons)				229	553	839	947	967	987	1,007	1,027	1,047
Cotton Spray Endosulphan (000 liters)				38	92	139	157	160	163	166	169	172
D.D.T. Dust (tons)				10	25	37	42	43	44	45	46	47
Maize Seed (tons)				51	123	187	212	217	222	227	232	237
Cotton Sprayers												
Total number of sprayers in operation			136	678	1,632	2,475	2,790	2,843	2,894	2,947	3,000	3,054
Number of sprayers purchased				542	1,090	1,385	1,405	1,438	1,456	1,491	1,509	1,545
<u>PHASE III AREA</u>												
Sulfate of Ammonia (tons)					794	1,735	2,429	2,745	2,803	2,859	2,915	2,972
Triple super-phosphate (T.S.P.) (tons)					349	762	1,067	1,206	1,232	1,257	1,282	1,308
Cotton Spray Endosulphan (000 liters)					58	127	177	200	204	207	211	215
D.D.T. Dust (tons)					16	34	48	54	57	57	58	59
Maize Seed (tons)					78	170	239	270	271	283	289	295
Cotton Sprayers												
Total number of sprayers in operation				171	1,030	2,251	3,147	3,552	3,622	3,686	3,752	3,822
Number of sprayers purchased					859	1,392	1,755	1,797	1,825	1,861	1,891	1,931
<u>TOTAL DISTRICT</u>												
Sulfate of Ammonia (tons)		580	1,315	2,728	5,026	6,679	7,683	8,104	8,268	8,429	8,593	8,695
Triple super-phosphate (T.S.P.) (tons)		255	578	1,198	2,208	2,935	3,376	3,562	3,636	3,708	3,781	3,827
Cotton Spray Endosulphan (000 liters)		42	96	199	367	487	559	589	600	610	621	628
D.D.T. Dust (tons)		11	28	56	99	131	151	160	163	167	171	173
Maize Seed (tons)		57	129	268	493	656	757	800	818	837	854	865
Cotton Sprayers												
Total number of sprayers in operation	187	752	1,843	3,708	6,513	8,649	9,935	10,464	10,660	10,849	11,043	11,167
Number of sprayers purchased		565	1,278	2,430	4,083	4,566	5,369	5,096	5,564	5,285	5,758	5,409

1/ Assumptions:

- Fertilizer/spray annual application:

	Cotton	Maize
Sulfate of Ammonia (kg/ha)	125	100
T.S.P. (kg/ha)	50	50
Cotton Spray (L/ha)	15	-
D.D.T. Dust (kg/ha)	-	5
Maize Seed (kg/ha)	-	25
- One cotton sprayer (and related equipment) per 3.75 ha of cotton.
- Life of sprayer - 2 years.

July 12, 1973

TA ZANIA

GEITA COTTON PROJECT

FARM BUDGET - CONSOLIDATED AND UJAMAA FARMERS (Individual Income)

	FARMER YEAR ^{12/}									
	YR. 0	YR. 1 ^{13/}	YR. 2 ^{13/}	YR. 3 ^{13/}	YR. 4 ^{13/}	YR. 5 ^{13/}	YR. 6 ^{14/}	YR. 7 ^{15/}	YR. 8 ^{16/}	onwards
Crops (ha)										
Cotton	1.25	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
Maize	1.00	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	
Yield (kg.)										
Cotton ^{1/}	625	1,050	1,240	1,350	1,425	1,500	1,575	1,615	1,650	
Maize ^{2/}	850	1,875	2,500	2,500	2,500	2,500	2,500	2,500	2,500	
Cost of Production (T.Shs)										
Fertiliser - Cotton ^{3/}	-	90.0	90.0	90.0	90.0	90.0	120.0	150.0	180.0	
Fertiliser - Maize ^{4/}	-	66.25	66.25	66.25	66.25	66.25	88.30	110.40	132.50	
Insecticide - Cotton ^{5/}	-	121.50	121.50	121.50	121.50	121.50	161.0	202.50	243.0	
Insecticide - Maize ^{6/}	-	12.50	12.50	12.50	12.50	12.50	16.65	20.80	25.0	
Sprayer - Cotton ^{7/}	-	16.80	16.80	16.80	16.80	16.80	16.80	16.80	16.80	
Batteries - Sprayer ^{9/}	-	22.80	22.80	22.80	22.80	22.80	22.80	22.80	22.80	
Cleaning Materials ^{10/}	-	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	
Seed ^{8/}	-	19.40	19.40	19.40	19.40	19.40	19.40	19.40	19.40	
Cultivations ^{17/}	-	396.0	396.0	396.0	396.0	396.0	396.0	396.0	396.0	
Interest	-	48.00	48.00	48.00	48.00	48.00	52.70	60.0	65.10	
Total Cost	-	796.25	796.25	796.25	796.25	796.25	896.65	1,001.70	1,103.60	
Farm Income (T.Shs)										
Cotton (T.Shs 1.08/kg)	675	1,134.00	1,339.20	1,458.0	1,539.0	1,620.0	1,701.0	1,744.20	1,782.0	
Maize (T.Shs 0.30/kg)	255	563.50	750.00	750.00	750.00	750.00	750.00	750.00	750.00	
Total	930	1,696.50	2,089.20	2,208.00	2,289.00	2,370.00	2,451.00	2,494.20	2,532.00	
Net Cash Income (T.Shs)										
	930	900.25	1,292.95	1,411.75	1,492.75	1,573.75	1,554.35	1,492.50	1,428.40	
Increased Income %	-	(3)	39	52	60	69	67	60	54	
Return on Input %	-	-	45	61	71	81	70	56	45	

- 1/ Based on average yield of:- Yr 0, 500 kg/ha Yr 1. 700 kg/ha Yr 2. 825 kg/ha Yr 3. 900 kg/ha Yr 4. 950 kg/ha Yr 5 1,000 kg/ha Yr 6. 1050 kg/ha Yr 7. 1075 kg/ha Yr 8. 1100 kg/ha
2/ Based on average yield of:- Yr 0. 850 kg/ha Yr 1. 1500 kg/ha Yr 2. onwards 2000 kg/ha
3/ at 125 kg/ha Sulphate of Ammonia, 50 kg/ha T. Superphosphate.
4/ at 100 kg/ha Sulphate of Ammonia, 50 kg/ha T. Superphosphate.
5/ 15 liters/ha per year at T.Shs 10.80/liter.
6/ 5 kg/ha 5% DDT Dust at T. Shs 3.85/kg.
7/ Cost price T. Shs 126.0 shared by three farmers and replaced in Yr 3, Yr 6, Yr 9 etc.
8/ Maize seed - 25 kg/ha at T. Shs 0.62/kg.
9/ 16 per annum with replacement sprayer water.
10/ Paraffin for cleaning sprayer.
11/ 8% per annum - 9 months only for inputs.
12/ Number of years the farmer has been in the project.
13/ Inputs with 50% subsidy.
14/ Inputs with 1/3 of subsidy removed.
15/ Inputs with 2/3 of subsidy removed.
16/ Inputs with no subsidy.
17/ 2.75 ha at 11 tractor hours at 36/-/tractor hour.

TANZANIA

GEITA COTTON PROJECT

Farm Budget - Unconsolidated Farmer

FARMER YEAR ^{12/}

	YR. 0	YR. 1 ^{13/}	YR. 2 ^{13/}	YR. 3 ^{13/}	YR. 4 ^{13/}	YR. 5 ^{13/}	YR. 6 ^{14/}	YR. 7 ^{15/}	YR. 8 ^{16/} onwards
Crops (ha)									
Cotton	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Maize	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Yield (kg.)									
Seed Cotton ^{1/}	625	875	1,030	1,125	1,190	1,250	1,315	1,345	1,375
Maize ^{2/}	850	1,500	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Cost of Production (T. Shs.)									
Fertiliser - Cotton ^{3/}	-	75.0	75.0	75.0	75.0	75.0	100.0	125.0	150.0
Fertiliser - Maize ^{4/}	-	53.0	53.0	53.0	53.0	53.0	77.0	88.0	106.0
Insecticide - Cotton ^{5/}	-	101.25	101.25	101.25	101.25	101.25	135.0	168.75	202.50
Insecticide - Maize ^{6/}	-	10.0	10.0	10.0	10.0	10.0	13.0	16.0	19.25
Sprayer - Cotton ^{7/}	-	16.80	16.80	16.80	16.80	16.80	16.80	16.80	16.80
Batteries - Sprayed ^{8/}	-	15.20	15.20	15.20	15.20	15.20	15.20	15.20	15.20
Cleaning Materials ^{10/}	-	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Seed ^{8/}	-	15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50
Loan Interest ^{11/}	-	18.80	18.80	18.80	18.80	18.80	24.20	28.85	33.90
Total Cost	-	307.55	307.55	307.55	307.55	307.55	398.70	476.10	561.15
Farm Income (T. Shs.)									
Maize @ T. Shs. 0.30/kg	255.0	450.0	600.0	600.0	600.0	600.0	600.0	600.0	600.0
Cotton @ T. Shs. 1.08/kg	675.0	945.0	1,112.40	1,215.0	1,285.20	1,350.0	1,420.20	1,452.60	1,485.0
Total	930.0	1,395.0	1,712.40	1,815.0	1,885.20	1,950.0	2,020.20	2,052.60	2,085.0
Net Cash Income (T. Shs.)	930.0	1,087.45	1,404.85	1,507.45	1,577.65	1,642.45	1,621.50	1,576.50	1,523.85
Increased Income %	-	17	51	62	70	77	74	69	64
Return on Inputs %	-	51	154	187	211	232	173	136	106

- 1/ Based on average yield of:- Yr 0, 500 kg/ha Yr 1, 700 kg/ha Yr 2, 825 kg/ha Yr 3, 900 kg/ha Yr 4, 950 kg/ha Yr 5, 1,000 kg/ha Yr 6, 1,050 kg/ha Yr 7, 1,075 kg/ha Yr 8, 1,100 kg/ha
- 2/ Based on average yield of:- Yr 0, 850 kg/ha Yr 1, 1500 kg/ha Yr 2 onwards 2000 kg/ha.
- 3/ at 125 kg/ha Sulphate of Ammonia, 50 kg/ha T. Superphosphate.
- 4/ at 100 kg/ha Sulphate of Ammonia, 50 kg/ha T. Superphosphate.
- 5/ 15 liters/ha per year at T. Shs 10.80/liter.
- 6/ 5 kg/ha 5% DDT Dust at T. Shs 3.85/kg.
- 7/ Cost price T. Shs 126.0 shared by three farmers and replaced in Yr 3, Yr 6, Yr 9 etc.
- 8/ Maize seed - 25 kg/ha at T. Shs 0.62/kg.
- 9/ 16 per annum with replacement sprayer water.
- 10/ Paraffin for cleaning sprayer.
- 11/ 8% per annum - 9 months only for inputs.
- 12/ Number of years the farmer has been in the project.
- 13/ Inputs with 50% subsidy.
- 14/ Inputs with 1/3 of subsidy removed.
- 15/ Inputs with 2/3 of subsidy removed.
- 16/ Inputs with no subsidy.

TANZANIA

GEITA COTTON PROJECT

Mechanization

A. Tractor Costs and Use

1. Tractor costs are based on the following information obtained in Geita by the mission:

- (a) Tractors, capable of delivering the equivalent of 60 BHP at sea level, would cost about Tsh 37,000 delivered, and would be written off over 5 years.
- (b) Fuel consumption gauged at 7.25 liters per hour, at Tsh 1.14/liter.
- (c) Lubricants at Tsh 2.00 per hour.
- (d) Spares and maintenance at 150% of tractor purchase price, or Tsh 11,100 per year.
- (e) License (Tsh 40.00 a year) and comprehensive insurance with the National Insurance Company.
- (f) Interest charges: 8-1/2% on Tsh 37,000 over five years = Tsh 1,990 a year.
- (g) Drivers wages have been assumed at Tsh 5,000 per annum.

2. In the budgets the minimum objective for tractor use of 1,400 hours a year of useful running has been assumed. The relationship between usage and costs is given in the following tabulation:

	Tsh/hr			
	Hours			
	600	1,000	1,400	1,800
Depreciation	12.35	7.40	5.28	4.11
Fuel	9.13	8.27	8.27	8.27
Lubricants	2.00	2.00	2.00	2.00
X Spares, Maintenance	18.50	11.10	7.94	6.16
License, Insurance	0.66	0.39	0.28	0.22
Interest	<u>3.32</u>	<u>1.99</u>	<u>1.42</u>	<u>1.10</u>
Sub-Total	<u>45.96</u>	<u>31.15</u>	<u>25.19</u>	<u>21.86</u>
Driver	<u>8.33</u>	<u>5.00</u>	<u>3.57</u>	<u>2.78</u>
Total	<u>54.29</u>	<u>36.15</u>	<u>28.76</u>	<u>24.64</u>

B. Tractor Operation Program

3. To ensure that tractors do sufficient useful work each year to be viable, a number of conditions for their operation have been established. These are:

- (a) There should be a minimum of 240 ha of land in the area intended for tractor cultivation within 5 km of the tractor base;
- (b) The land should be fully cleared of bush and stumped before the start of the season, and should be in blocks of a minimum of 5 ha aligned to facilitate cultivation along the contour;
- (c) Mechanization must be comprehensive if it is to be effective. Land preparation, ridging and fertilizing would, therefore, all be by tractor;
- (d) Cultivation would start immediately after the previous harvest to allow as long a season as possible before the optimum planting dates - November 2 for maize and December 5 for cotton;
- (e) Speed of work will be increased by replacing ploughing (0.24 ha/hr) with two runs of a heavy-tine cultivator (each 0.89 ha/hr);

- (f) Operations have been assumed to be for 10 hours a day (of which one is used for fuel, water, grazing and equipment preparation), 6 days a week. This is a minimum for peak-season operations. A 70% efficiency factor used in tractor costing allows for travel, running and rest time.

C. Rotation and Mechanization Plan

4. The rotation proposed initially in the Project is Fallow - Cotton - Maize - Cotton - Fallow.

	Block 1	Block 2	Block 3	Block 4	Block 5
1st year	Fallow	Fallow	Cotton	Maize	Cotton
2nd year	Cotton	Fallow	Fallow	Cotton	Maize
3rd year	Maize	Cotton	Fallow	Fallow	Cotton
4th year	Cotton	Maize	Cotton	Fallow	Fallow
5th year	Fallow	Cotton	Maize	Cotton	Fallow

Mechanization Plan

5. Two deep cultivations would be followed by ridging. In the case of cotton, superphosphate would be placed at the time of ridging and a nitrogen top dressing applied after planting. Maize land would be ridged and both superphosphate and basal dressing of nitrogen would be added at time of ridging.

Rotation 1: Maize to Cotton

Cultivation: Two crossings with deep cultivator

Output: 0.44 hectares/hour

Cultivation: Ridging and fertilizing

Output: 0.60 hectares/hour

Hectares
prepared: 80

Time: Hours of working time

Tilling	80/0.44	182 hrs.
Ridging	80/0.60	<u>134 hrs.</u>
		316 hrs.

Rotation 2: Fallow to Cotton

Cultivation: Two crossings with heavy cultivator

Output: 0.89 hectares/hour = 0.44 hectares total output

Cultivation: Ridging and fertilizing

Output: 0.6 hectares/hour

Hectares
prepared: 80

Time: Hours of working time

Tilling	80/0.44	182 hrs.
Ridging	80/0.60	<u>134 hrs.</u>
		316 hrs.

Rotation 3: Cotton to Maize

Cultivation: Two crossings with cultivator

Output: 0.44 hectares/hour

Cultivation: Ridging and fertilizing

Output: 0.5 hectares/hour

Hectares
prepared: 80

Time: Hours of working time

Tilling	80/0.44	182 hrs.
Ridging & Fertilizing	80/0.50	<u>160 hrs.</u>
		342 hrs.

6. The total working time involved in preparing and fertilizing the cotton-maize-cotton rotation on a 240 ha block of land would therefore be:

Fallow to cotton	316 hrs.
Maize to cotton	316 hrs.
Cotton to maize	<u>342 hrs.</u>
Total working hours	<u>974 hrs.</u>

It is calculated that the efficiency ratio between working hours and total hours would be about 0.7. Therefore, the expected annual tractor hours would be 1,400. The most time restricted section of the rotation would be the cotton to maize section, as the cotton would not be cleared until September 15, and the maize should be planted by November 2. In this 7-week period of peak tractor use, a second driver would be needed. If the start of cultivation could be brought forward to September 1, a reasonable proposition if the crop is planted early, this peak could be flattened out considerably. Cultivation of fallow land should start by mid-May and it is recommended that maize be planted by November 2, and cotton by December 5.

7. The cultivation timetable would be as follows:

- (a) Mid-May - Commence cultivation of fallow land for cotton. Two passes require 5.5 weeks. Completion by end of June.
- (b) Start cultivation of maize to cotton land: two passes with the cultivator taking 5.5 weeks. Completion beginning of August.
- (c) Ridge the fallow to cotton land and apply superphosphate. This will take four weeks and be completed about the end of August.
- (d) About September 1, work should commence on the cotton to maize section of the rotation: two cultivations and ridging to be carried out by November 1.

8. This program allows nine weeks in which to carry out 342 hours of work - equivalent, at 70% efficiency, to 489 hours. This is equivalent to 55 hours work/week or nine hours work per day. An hour a day would also be needed for service maintenance and refueling.

D. The Mechanization Section

9. Mechanization would require changes in the pattern of production, and to assist Ujamaa farms in adapting to this regime, the Mechanization Section would be responsible for:

- (a) training drivers who would be selected by the village from among their members to drive and maintain their tractors, measure plots and keep records;
- (b) advising and assisting villages on mechanical cultivation techniques and on tractor and implement care and maintenance;
- (c) setting hire charges and advising on hire operations;
- (d) providing for movable workshop or field repairs as appropriate;
- (e) confirmation that credit conditions are met by potential tractor-owner villages; and
- (f) ensuring tractors, implements and spares are available.

October 31, 1973

TANZANIA
GEITA COTTON PROJECTBuild-Up of Tractors, Cultivation Implements and Additional Storage ^{1/}

PROJECT YEAR	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12
CROP SEASON	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86
PHASE I AREA													
Total number of tractors/ploughs/ ridgers/tillers in operation	1	4	9	19	31	44	57	69	82	94	107	107	107
Number of units purchased													
Tractors		3	5	10	12	14	16	17	23	24	27	16	17
Ploughs/ridgers		3	5	10	12	13	14	15	18	22	25	13	14
Tillers		3	5	10	12	13	13	13	16	17	23	12	13
Additional Storage													
Seed Cotton Stores		3	6	8	9	6	6	4	4	4	4	2	1
Fertilizer Stores		31			3								
Insecticides Stores		31			3								
PHASE II AREA													
Total number of tractors/ploughs/ ridgers/tillers in operation			1	3	9	17	26	35	44	53	62	71	71
Number of units purchased													
Tractors				2	6	8	9	10	11	15	18	18	10
Ploughs/ridgers				2	6	8	9	9	10	11	15	17	9
Tillers				2	6	8	9	9	9	10	11	15	8
Additional Storage													
Seed Cotton Stores				3	5	7	6	4	3	3	3	2	
Fertilizer Stores				31			3						
Insecticides Stores				31			3						
PHASE III AREA													
Total number of tractors/ploughs/ ridgers/tillers in operation				1	4	12	22	34	45	57	68	80	91
Number of units purchased													
Tractors					3	8	10	12	12	15	19	22	23
Ploughs/ridgers					3	8	10	12	11	13	14	20	21
Tillers					3	8	10	12	11	12	12	13	19
Additional Storage													
Seed Cotton Stores					4	7	9	7	5	4	4	4	
Fertilizer Stores					46			4					
Insecticides Stores					46			4					
TOTAL DISTRICT													
Total number of tractors/ploughs/ ridgers/tillers in operation	1	4	10	23	44	73	105	138	171	204	237	258	269
Number of units purchased													
Tractors		3	5	12	21	30	35	39	46	54	64	56	50
Ploughs/ridgers		3	5	12	21	29	33	36	39	46	54	50	44
Tillers		3	5	12	21	29	32	34	36	39	46	40	40
Additional Storage													
Seed Cotton Stores		3	6	11	18	20	21	15	12	11	11	8	
Fertilizer Stores		31		31	49		3	4					
Insecticides Stores		31		31	49		3	4					

^{1/} Assumptions:

- One tractor (and related cultivation implements) per 240 ha. consolidated under cotton or maize.
- Life of equipment:
 - tractors : 5 years
 - ploughs/ridgers : 6 years
 - tillers : 7 years
- One additional Seed Cotton Store for every 200 Tons of extra seed cotton production (unit capacity of 90 Tons with a 40% diversity).
- One Fertilizer Store and one Insecticide Store per Cooperative with a residual at the time of saturation in each phase

TANZANIA
GETITA COTTON PROJECT

Mechanization Section - Build-Up of Workshops and Tractor Handling Capacity ^{1/}
(Unit: number of tractors handled)

PROJECT YEAR	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11
CROP SEASON	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85
<u>Central Workshop (Geita)</u>												
First Stage			14	14	14	14	14	14	14	14	14	14
Second Stage (expansion)						14	14	14	14	14	14	14
Third Stage (expansion)									22	22	22	22
<u>Moveable Workshops</u>												
Karumwa							14	14	14	14	14	14
Sengerema								14	14	14	14	14
Biluluma										14	14	14
<u>Mobile Units</u>												
M/U no.1			11	11	11	11	11	11	11	11	11	11
M/U no.2					11	11	11	11	11	11	11	11
M/U no.3						11	11	11	11	11	11	11
M/U no.4								11	11	11	11	11
M/U no.5									11	11	11	11
M/U no.6										11	11	11
M/U no.7-8											22	22
M/U no.9-10												22
<u>Total Tractor Handling Capacity</u>			25	25	36	61	75	100	133	158	180	202

^{1/} Based on number of used tractors in operation (more than one year of age).

July 12, 1973

TANZANIA

GEITA COTTON PROJECT

Road Study: Terms of Reference

1. The Geita Peninsula in Mwanza Region has become one of the most important cotton growing areas of Tanzania. Cotton production has increased, mainly due to an expansion of acreage, but the Government envisages that production increases in the future will depend more on the introduction of improved farming methods; it therefore plans an intensification program including increased extension services to the farmer and new inputs available on credit. In order to be successful, this program (planned for implementation in three phases as outlined below) will need an adequate network of roads for transporting cotton from buying posts to ginneries and from there to railheads. Present movement of cotton is, however, expensive because most of the secondary roads and cotton tracks in the District are in poor state of repair. Many are impassable during the rainy season when cotton movement is still taking place. The provision of a network of all-weather roads in the area would reduce total mileage and lower unit vehicle operating costs. It would also facilitate distribution of inputs and the assimilation of new techniques.

<u>Phase</u>	<u>Areas to be Developed</u>	<u>Starting Date</u> (crop year)
I.	Bukoli, Mwingiro, Karumwa, Bukwimba, Kakora, Nyangwale, Ihamilo, Bulela (sub-divisions), and Kalangalala (division).	1974/75 through 1975/76
II.	Busanda, Butundwe, Bugando, Kahunda, and Sima (sub-divisions).	1976/77
III.	Kazunzu, Nyakalilo, Kasenyi, Kasungamile, Nyamatongo, and Bukura (sub-divisions).	1977/78

A. Objectives

2. The purpose of the study is to (i) identify the roads and tracks needed to support cotton production in the Geita district, and (ii) carry out such engineering as is necessary to satisfy the needs identified, including detailed proposals for the execution of the works and any necessary bidding

documents to enable the Government to call for bids for the proposed improvements. The study area will consist of all of the Geita District except the existing Buyagu cotton zone and other corridors within the District which were covered in studies carried out in 1966 by Sir William Halcrow and Partners, Consulting Engineers.

B. Scope of Consulting Services

General

3. The Study shall have two parts and shall give priority to the area included under Phase I of the development program:

Part 1 shall include a determination of the technical and economic feasibility, based upon typical per km costs for construction, and maintenance and vehicle operating costs suited to the alternatives under consideration of either improving the existing roads and tracks needed to support cotton production in the Geita district or constructing new ones;

Part 2 shall include the carrying out of such engineering as is necessary for the improvement or construction of the roads and tracks identified as necessary under Part 1, making detailed proposals for their construction, including if necessary the preparation of the appropriate bidding documents to enable the Government to call for bids for the proposed works. The services comprising Part 2 shall not be commenced until specific instructions have been issued by the Government to carry out these services. The service under this part may be delayed, deleted or reduced in scope, or carried out under separate arrangements at the option of the Government.

4. The consultants shall perform all field engineering work, economic studies, and other related works as required to attain the objectives described above, even though they have not been expressly set forth in these terms of reference. In the conduct of their work, the consultants shall cooperate fully with the Central, Regional and District Government ministries and departments responsible for agriculture, transport and development planning, and with the Tanzania Cotton Authority. The Government will provide the consultants with available data. The consultants shall be solely responsible, however, for the analyses and interpretation of all data received and for the conclusions and recommendations in their reports.

Part 1: Technical and Economic Feasibility Studies for the Improvement of the Existing Roads and Tracks or the Construction of New Roads and Tracks needed to Support Cotton Production in the Geita District

5. Selection of Alternative Routes and Design Standards. The consultants shall determine the technical and economic feasibility of either improving the existing roads and tracks or constructing new ones to serve their areas of influence. The consultants shall first review any studies already carried out on development of roads in the District, evaluate possible alternative routes and select the most advantageous alignments, construction and maintenance standards to serve the existing and proposed development in the District on the basis of (i) traffic forecasts, (ii) reconnaissance field surveys, (iii) construction and maintenance cost estimates based on typical per km costs, and (iv) preliminary economic analysis. Studies of alternative routes shall commence with an evaluation of existing roads and tracks and include the possibilities of upgrading them by relocating short sections to improve drainage, widths, curvature, grades and surfacing.

6. Based on a review of available maps, aerial photographs, existing facilities such as seed cotton buying posts and ginneries, and proposed development plans for the areas of influence of the roads and tracks, the consultants shall determine the type and amount of any additional engineering studies to the extent necessary for establishing preliminary cost estimates of alternative solutions under study. The cost estimates shall be based on typical construction costs of bridges and culverts and per km construction cost of road for the construction and maintenance standards appropriate to the anticipated traffic on each section of the roads.

7. To determine the type and volume of future traffic for each of the alternative alignments under study, the consultants shall analyze all available data on traffic in the areas of the zones of influence of the alternative alignments including estimates of figures on production of cotton in Geita. If the consultants find that additional traffic counts and origin and destination studies are required for the purposes of their study, the necessary additional counts and field investigations shall be undertaken by the consultants with the assistance of the Government. In addition, the consultants shall identify, describe and quantify existing and potential traffic generating sources in the areas served or to be served by the road alignments under investigation. Such identification shall take account of the existing development and the proposed Geita Cotton Project and an estimate of future demands for road transport resulting from:

- (a) development of agricultural and other production in the Geita District; and
- (b) anticipated growth in population, local trades and social activities.

8. The consultants shall make a preliminary economic analysis for each alternative alignment under study, using the methods outlined below and the traffic forecasts and construction cost estimates described above. On this basis, the consultants shall make recommendations as to alignments, design standards and methods for the improvement or construction of the roads and tracks identified as necessary to support cotton production in Geita. The

consultants may conclude that improvements of some or all of the roads or sections may be so simple as to require only 'type' engineering in which case such type engineering and the extent to which it should be carried out shall be described.

9. Economic Analysis. The economic analysis of major alternative alignments shall include:

- (a) estimates of the volume and identification of origin and destination of traffic entering or leaving the areas of influence of the roads;
- (b) estimates of induced agricultural and other traffic on the roads under study, assuming the increased production envisaged under the Cotton Project;
- (c) estimates of costs of construction, maintenance and administration for the economic life of the proposed road improvements;
- (d) estimates of present and future transport costs with and without the proposed improvements using unit costs of owning and operating typical vehicles on the existing road, and estimated future costs of vehicle operation on the existing and proposed improved roads; and
- (e) estimates of other economic benefits, if any, including reductions in road maintenance costs and increase in the net value of agricultural or other outputs resulting from the proposed road improvements.

The net benefits of the proposed road development assessed to be required to meet the transport needs of the area shall be compared with the costs of providing those roads. For each alternative, net present values discounted at rates of 10%, 12 1/2% and 15% shall be calculated. On the basis of these calculations, the optimum solution to the transport problems of the area shall be determined.

Part 2: Preparation of Engineering and Bidding Documents

10. After review and approval by the Government and the Association of the consultants' recommendations in Part 1 above, the consultants may be called upon to prepare such engineering and other documents as are necessary for the optimum solution proposed for the transport needs of the area.

11. For this purpose, the consultants shall carry out such engineering work as is necessary to attain the objectives set forth above. The consultants may conclude that improvements of some or all of the roads or sections may be so simple as to require only 'type' engineering, in which case such engineering and the extent to which it should be carried out shall be described. The consultants shall make recommendations as to how any subsequent construction or improvement works shall be executed; the possibilities, advantages and disadvantages of the following alternatives should be particularly investigated and discussed: (i) international competitive bidding; (ii) force account; or (iii) local bidding. In carrying out such work the consultants will:

- (a) carry out further topographical, geotechnical, hydrological and material surveys necessary for the engineering of the roads;
- (b) establish the center line of the proposed roads on the ground, making any changes considered necessary after agreement with the Government;
- (c) take such additional levels and cross sections as are required to prepare any necessary engineering for the roads and locate benchmarks at suitable intervals;
- (d) locate and design drainage and other structures including any necessary calculations of waterways areas;
- (e) prepare any documents necessary to enable the Government to proceed with the works including conditions of contract, specifications, drawings (to an appropriate scale), bills of quantities and forms for bid bonds. In preparing any such documents consideration shall be given, to the extent possible, to specifications existing in the country. However, if alterations to such specifications are considered necessary, they shall be included and reasons given;
- (f) prepare detailed estimates of the cost of construction;
- (g) calculate foreign and local currency costs in detail for each item in the bills of quantities. The foreign exchange component of cost shall comprise such items as depreciation of imported equipment, imported materials and supplies, foreign exchange component of wages of expatriate personnel, overhead and profit of foreign firms and also the principal foreign exchange element of locally produced materials incorporated in the works; and
- (h) prequalify bidders if required to do so.

C. Data, Local Services and Facilities to be Provided by the Government

Data

12. The Government shall provide the consultants with the following:
- (a) all reports or previous studies on production and movement of cotton in the Geita district;
 - (b) appropriate highway traffic counts, origin and destination surveys, and any national or area traffic statistics;
 - (c) all available user costs information for all modes of transport;
 - (d) records or information on recent costs of road construction and maintenance for various types of roads in Tanzania; and
 - (e) assistance in undertaking additional highway traffic counts and origin and estimation surveys.

In connection with work by the consultants which requires the cooperation and/or assistance of other Government agencies, the Government shall provide proper liaison and shall ensure that the consultants have access to all information required for the adequate conduct and completion of the studies.

Local Facilities

13. The Government shall provide certain facilities to be defined at negotiations to help consultants in performing the services in Tanzania. The Government shall assist and guide consultants in locating satisfactory and appropriate accommodation for personnel.

D. Reports and Documents

Part 1

14. The consultants shall furnish the Government with the following reports, all in English:
- (a) Inception Report - a summary of initial findings of the consultants, and detailed proposals (in view of preliminary findings) for the conduct of the study;

- (b) Bi-monthly Progress Reports - (copies to the Government, the Association and to PMEA) after the submission of the Inception Report giving a statement of all work performed during the reporting period;
- (c) Interim Report - containing consultants' findings, conclusions and recommendations in respect of road requirements of the area under Phase I of the development program including, if agreed by the Government, any recommendations that would be necessary under Part 2 of the study for the roads and tracks;
- (d) Draft Final Report upon completion of Part 1 of the study, summarizing all work performed, and findings, conclusions and consultants' recommendations. This report shall be presented in edited form, complete with all relevant materials, maps, graphs, diagrams, plans and tables which support the Final Report, for comments by the Government and the Association;
- (e) Final Report of Part 1 of the study, incorporating all revisions deemed appropriate by consultants after receipt and discussion of comments on the Draft Final Report with the Government.

Part 2

15. Should the consultants be called upon to undertake Part 2 of the study, they shall, in addition to the Part 1 Report, furnish to the Government the following:

- (a) Inception Report summarizing any revised findings by the consultants and detailed proposals for conduct of the studies;
- (b) Bi-monthly Progress Reports - in a format to be agreed with the Government, summarizing all work performed during the period under review, new findings and recommendations by consultants, and a record of all important decisions made regarding the design or other aspects of the work (number of copies to be decided by the Government);
- (c) Draft Final Report - on completion of detailed engineering and tender documents, copies of all relevant engineering and soil tests reports, engineering calculations, any revised cost estimates based on final engineering, and a revised economic assessment if costs are significantly different from those in the Part 1 Final Report; and
- (d) Final Report - complete set of tender documents and supporting technical reports.

E. Time Schedule

6. The consultants shall begin the studies for Part 1 within 30 calendar days of the effective date of the contract and shall submit the Reports mentioned in Section IV above, within the following time schedule:

Part 1

Inception Report - within 30 days of contract effective date;

Progress Report - bi-monthly during progress of the Study;

Interim Report - within 4 months of contract effective date;

Draft Final Report - within 12 months of contract effective date;

Final Report - within one month of receipt of comments on Draft Final Report from the Government and the Association which comments shall be presented and discussed no later than 45 days from the date Draft Final Report is submitted to the Government and the Association.

Part 2

Inception Report - within 30 days of receipt of instructions to proceed with Part 2 of the Study;

Progress Report - bi-monthly during progress of the work;

Contract Documents - within the time stipulated in the consultants' agreement.

TANZANIA

GEITA COTTON PROJECT

Summary of Project Costs
(TSh'000)

	<u>Y1</u> <u>1974/75</u>	<u>Y2</u> <u>1975/76</u>	<u>Y3</u> <u>1976/77</u>	<u>Y4</u> <u>1977/78</u>	<u>Y5</u> <u>1978/79</u>	<u>Y6</u> <u>1979/80</u>	<u>Y7</u> <u>1980/81</u>	<u>Total Cost over</u> <u>Project Period</u>
<u>Farm Credit</u>								
Seasonal Credit	1,111	1,420	2,714	4,428	3,174	1,919	808	15,574
Medium-term credit								
- sprayers	109	174	291	602	525	531	664	2,896
- tractors	117	186	540	751	1,022	1,215	1,313	5,144
- implements	65	106	254	442	604	666	750	2,887
Cultivation credit	59	74	192	325	429	474	488	2,041
Sub-total	<u>1,461</u>	<u>1,960</u>	<u>3,991</u>	<u>6,548</u>	<u>5,754</u>	<u>4,805</u>	<u>4,023</u>	<u>28,542</u>
<u>Project Investment</u>								
Vehicles	295	17	90	115	308	34	87	946
Storage	1,609	180	2,619	2,941	600	777	646	9,372
Buildings	412	-	-	52	52	52	204	772
Housing	4,209	568	820	189	235	188	50	6,259
Equipment	535	35	60	95	115	276	236	1,352
Ginnery water supply	369							369
Road survey	1,892	571						2,463
Road construction	2,749	5,102	6,532	12,004	8,738			35,125
Health facilities	700	700	700	700				2,800
Schools	1,128	2,363						3,491
Sub-total	<u>13,898</u>	<u>9,536</u>	<u>10,821</u>	<u>16,096</u>	<u>10,048</u>	<u>1,327</u>	<u>1,223</u>	<u>62,949</u>
<u>Project Administration</u>								
Wages and salaries	3,064	3,277	3,896	4,196	4,394	3,712	3,732	26,271
Operating costs	332	397	431	489	513	411	406	2,979
Sub-total	<u>3,396</u>	<u>3,674</u>	<u>4,327</u>	<u>4,685</u>	<u>4,907</u>	<u>4,123</u>	<u>4,138</u>	<u>29,250</u>
Total	<u>18,755</u>	<u>15,170</u>	<u>19,139</u>	<u>27,329</u>	<u>20,709</u>	<u>10,255</u>	<u>9,384</u>	<u>120,741</u>
<u>Contingency Allowances</u>								
Physical	2,013	1,772	2,241	3,333	2,503	1,026	938	13,837
Price	1,313	2,185	4,307	8,472	8,325	5,128	5,678	35,408
Total Project Cost	<u>22,081</u>	<u>19,127</u>	<u>25,687</u>	<u>39,134</u>	<u>31,542</u>	<u>16,409</u>	<u>16,000</u>	<u>169,980</u>

TANZANIA

GEITA COTTON PROJECT

Annual Costs of Project Headquarters and Mechanization Section
(TSh '000)

PROJECT/YEAR	Project Period										
	Y1 1974/75	Y2 1975/76	Y3 1976/77	Y4 1977/78	Y5 1978/79	Y6 1979/80	Y7 1980/81	Y8 1981/82	Y9 1983/83	Y10 1983/84	Y11 1984/85
A. Buildings and Equipment											
Project Headquarters											
Administration	- Buildings	100									
	- Equipment	90			40				40		
	- Total	190			40				40		
Research Unit	- Buildings	160									
	- Equipment	230				115	115				115
	- Total	390				115	115				115
Soil Analytical Lab.	- Buildings	100									
	- Equipment	120			40						
	- Total	220			40						
Land Use Planning Unit	- Equipment	44				44					44
Visual Aid (cinema van and misc. equip.)		1	60								
Total Headquarters	- Buildings	360									
	- Equipment	485		60		80	159		40		159
	- Total	845		60		80	159		40		159
Mechanization Section											
Geita Central Workshop	- Buildings	52			52		152				
	- Equipment	50			60		40		60		50
	- Total	102			112		192		60		50
Moveable Workshops	- Building				52		52				
	- Equipment					39	39	39	35		39
	- Total					91	91	39	35		39
Mobile Units	- F.W.D.		28		28		28		55		83
	- Equipment		7		7		14		7		21
	- Total		35		35		42		62		97
Total Mechanization Section	- Buildings	52			52		52		204		
	- Equipment	50	35		95		117		101	168	186
	- Total	102	35		147		169		101	168	186
B. Housing		3,630		52	35	135	150		150	30	30
C. Vehicles ^{2/}		220				220				220	
D. Salaries											
Management ^{3/}		812	805	805	580	580	160	160	160	160	160
Financial Section		230	230	230	230	230	60	60	60	60	60
Project Evaluation Unit		286	286	286	302	302	132	132	132	132	132
Research Unit		628	628	628	418	418	208	208	208	208	208
Soil Analytical Lab.		340	340	340	130	130	130	130	130	130	130
Land Use Planning Unit		185	185	185	185	185	185	185	185	185	185
Ancillary Staff and Drivers		147	147	147	147	147	147	147	147	147	147
Mechanization Section		15	50	50	69	104	163	236	278	350	412
Total		2,643	2,671	2,671	2,061	2,096	1,185	1,258	1,300	1,372	1,398
E. Running Expenses											
Workshops ^{4/}		-	61	61	81	103	111		161	190	232
Others ^{5/}		300	300	300	300	300	300		300	300	300
Total Investment Costs		4,797	35	115	182	522	478	490	251	458	134
Total Recurrent Costs		2,943	3,032	3,032	2,442	2,499	1,596	1,698	1,761	1,862	1,930
Total Costs		7,740	3,067	3,147	2,624	3,021	2,074	2,188	2,012	2,320	2,064
Total Costs with Physical Contingencies ^{6/}		9,056	3,816	4,170	3,699	4,537	3,318	3,731	3,658	4,496	4,266

^{1/} Includes 15 office spaces and storage.^{2/} Investment cost of eight four-wheel-drive vehicles for Project Headquarters' Staff.^{3/} Includes provision for 5 year expenses on expatriate procurement specialist within T.R.D.B. (annual salary TSh 210,000; annual housing allowance TSh15,000; initial training in Washington TSh7,000)^{4/} Geita workshop: TSh 40,000/year; Moveable workshops: TSh 8,000/year; Mobile units: TSh 20,000/year.^{5/} Includes F.W.D. and cinema van operations costs (TSh 20,000 per unit) and others (TSh 140,000) such as farm costs for research activities and miscellaneous tools and materials.^{6/} Cumulative price contingency of 7% annually and 10% physical contingencies.

TANZANIA

GETA COTTON PROJECT

ANNEX 6
Table 3Annual Costs of Inputs, Equipment, Storage, Extension and Credit Services - Breakdown by Phase
(Tsh'000)

PROJECT/PROGRAM YEAR	Project Period										
	Y1 1974/75	Y2 1975/76	Y3 1976/77	Y4 1977/78	Y5 1978/79	Y6 1979/80	Y7 1980/81	Y8 1981/82	Y9 1982/83	Y10 1983/84	Y11 1984/85
PHASE I AREA											
Inputs and Equipment											
Inputs	1,111	1,420	1,712	1,476	118	114	117	115	110	119	-
Cotton sprayers	109	174	189	274	181	220	257	212	203	287	187
Tractors	117	186	460	410	438	556	585	876	872	923	544
Ploughs/ridgers/tillers	65	106	209	251	266	264	314	382	499	580	326
Storage	1,609	180	240	417	180	180	120	120	120	120	60
Extension and credit services											
Salaries	421	606	812	975	778	804	813	830	848	865	865
Housing	579	86	71	-	-	-	-	-	-	-	-
Vehicles	75	17	15	17	60	12	16	16	41	9	12
Running expenses											
Tractors	59	74	148	177	193	192	177	192	177	193	-
Vehicles	32	36	38	40	38	38	38	38	38	38	38
Total Investment Costs	2,554	749	1,184	1,369	1,125	1,232	1,292	1,606	1,735	1,919	1,125
Total Recurrent Costs	1,623	2,136	2,710	2,668	1,127	1,148	1,145	1,145	1,173	1,215	903
Total Costs	4,177	2,885	3,894	4,037	2,252	2,380	2,437	2,751	2,908	3,134	2,028
PHASE II AREA											
Inputs and Equipment											
Inputs			1,002	1,422	1,244	475	84	84	84	85	84
Cotton sprayers			102	168	136	157	280	142	162	185	147
Tractors			80	224	287	303	301	361	594	694	649
Ploughs/ridgers/tillers			45	126	168	187	185	184	226	334	401
Storage			1,609	150	210	327	120	90	90	90	60
Extension and credit services											
Salaries			413	584	729	778	650	659	676	676	694
Housing		482	74	65	32	-	-	-	-	-	-
Vehicles			75	13	12	10	56	13	18	8	43
Running expenses											
Tractors			44	89	118	134	133	133	133	133	133
Vehicles			32	34	36	38	38	38	38	38	38
Total Investment Costs		482	1,985	746	845	984	942	790	1,090	1,311	1,300
Total Recurrent Costs			1,491	2,129	2,127	1,425	975	914	931	932	949
Total Costs		482	3,476	2,875	2,972	2,409	1,847	1,704	2,021	2,243	2,249
PHASE III AREA											
Inputs and Equipment											
Inputs				1,530	1,812	1,330	607	109	101	107	108
Cotton sprayers				160	208	153	228	222	160	233	230
Tractors				117	297	356	427	354	493	724	812
Ploughs/ridgers/tillers				65	170	215	251	221	237	284	433
Storage				2,374	210	270	406	150	120	120	120
Extension and credit services											
Salaries				576	791	945	1,011	848	866	875	892
Housing			620	89	68	38	-	-	-	-	-
Vehicles				85	16	12	15	56	19	24	9
Running expenses											
Tractors				59	118	148	178	164	177	162	178
Vehicles				34	36	35	30	38	38	38	38
Total Investment Costs			620	2,890	969	1,044	1,327	1,003	1,029	1,385	1,604
Total Recurrent Costs				2,199	2,777	2,458	1,826	1,159	1,182	1,182	1,216
Total Costs			620	5,089	3,726	3,502	3,153	2,162	2,211	2,567	2,820
TOTAL DISTRICT											
Inputs and Equipment											
Inputs	1,111	1,420	2,714	4,428	3,174	1,919	808	308	295	311	192
Cotton sprayers	109	174	291	602	525	531	664	575	526	705	564
Tractors	117	186	540	751	1,022	1,215	1,313	1,591	1,959	2,341	2,005
Ploughs/ridgers/tillers	65	106	254	442	604	666	750	787	962	1,198	1,160
Storage	1,609	180	1,849	2,941	600	777	646	360	330	330	240
Extension and credit services											
Salaries	421	606	1,225	2,135	2,298	2,527	2,474	2,337	2,390	2,416	2,451
Housing	579	568	765	154	100	38	-	-	-	-	-
Vehicles	75	17	90	115	88	34	87	85	78	41	64
Running expenses											
Tractors	59	74	192	325	429	474	488	489	487	488	311
Vehicles	32	36	70	108	110	111	106	114	114	114	114
Total Investment Costs	2,554	1,231	3,789	5,005	2,939	3,261	3,560	3,398	3,855	4,615	4,033
Total Recurrent Costs	1,623	2,136	4,201	6,996	6,011	5,031	3,876	3,248	3,286	3,329	3,068
Total Costs	4,177	3,367	7,990	12,001	8,950	8,292	7,436	6,646	7,141	7,944	7,101
Total Costs with Contingencies	4,887	4,188	10,587	16,921	13,443	13,266	12,680	12,085	13,837	16,420	15,622

TANZANIAGEITA COTTON PROJECTEstimated Schedule of Disbursement of IDA Credit

<u>IDA Fiscal Year and Quarter</u>	<u>End of Quarter</u>	<u>Cumulative Amount Disbursed</u>	<u>Balance of Credit</u>
		(US\$'000)	
	0		17,500
1974/75	1	-	-
	2	-	-
	3	400	17,100
	4	800	16,700
1975/76	1	1,200	16,300
	2	1,700	15,800
	3	2,300	15,200
	4	2,800	14,700
1976/77	1	3,300	14,200
	2	3,800	13,700
	3	4,300	13,200
	4	4,900	12,600
1977/78	1	5,500	12,000
	2	6,200	11,300
	3	7,000	10,500
	4	8,000	9,500
1978/79	1	9,000	8,500
	2	10,000	7,500
	3	11,000	6,500
	4	11,900	5,600
1979/80	1	12,700	4,800
	2	13,400	4,100
	3	14,100	3,400
	4	14,600	2,900
1980/81	1	15,100	2,400
	2	15,600	1,900
	3	16,000	1,500
	4	16,400	1,100
1981/82	1	16,800	700
	2	17,200	300
	3	17,500	-

TANZANIA
GIITA COTTON PROJECT
Build-Up and Unit Costs of Staff

A. PROJECT HEADQUARTERS	Number	Period in Program	Unit Salary ^{1/}	Unit Housing Costs	Transport
<u>Management</u>					
Project Manager (exp.)	1	Y1 - Y5	250,000	150,000	
Deputy Project Manager	1	Y1 - Y20	40,000	150,000	
Chief Extension Officer	1	Y1 - Y20	40,000	150,000	
Chief Credit Officer	1	Y1 - Y20	40,000	150,000	
Chief Mechanization Officer - exp.	1	Y1 - Y5	210,000	150,000	
- local	1	Y6 - Y20	40,000	-	
Transport					27,500 (8 units) ^{3/}
<u>Financial Section</u>					
Accountant - exp.	1	Y1 - Y5	210,000	150,000	
- local	1	Y6 - Y20	40,000	-	
Accounts Clerk	1	Y1 - Y20	20,000	100,000	
<u>Technical Services</u>					
<u>Evaluation Unit</u>					
Agricultural Economist - exp.	1	Y1 - Y5	210,000	150,000	
- local	1	Y6 - Y20	40,000	-	
Statistical Assistant	1	Y1 - Y20	20,000	100,000	
Farm Survey Officer	1	Y1 - Y20	20,000	100,000	
Data Clerks	2	Y1 - Y3	8,750	20,000	
	3	Y4 - Y20	-	-	
Senior Enumerators	2	Y1 - Y3	8,750	20,000	
	3	Y4 - Y20	-	-	
<u>Research Unit</u>					
Research Officers - exp.	2	Y1 - Y3	210,000	150,000	
- exp.	1	Y4 - Y5	-	-	
- local	1	Y1 - Y20	25,000	150,000	
Diplomate	1	Y1 - Y20	20,000	100,000	
Field Assistants - Gr. I	7	Y1 - Y20	13,750	20,000	
- Gr. II	7	Y1 - Y20	8,750	20,000	
Tractor Driver	1	Y1 - Y20	6,250	-	
<u>Soil Analytical Lab.</u>					
Professional Officer - exp.	1	Y1 - Y3	210,000	150,000	
- local	2	Y1 - Y20	30,000	150,000	
Lab. Assistants	8	Y1 - Y20	8,750	20,000	
<u>Land Use Planning Unit</u>					
Senior Planning Officer	1	Y1 - Y20	30,000	150,000	
Graduate Planning Officer	1	Y1 - Y20	25,000	100,000	
Diplomates	2	Y1 - Y20	20,000	100,000	
Senior Topographer	1	Y1 - Y20	25,000	100,000	
Draftsmen	2	Y1 - Y20	15,000	20,000	
Field Assistants	4	Y1 - Y20	8,750	20,000	
<u>Ancillary Staff and Drivers</u>					
Clerks	5	Y1 - Y20	8,750	20,000	
Typists	6	Y1 - Y20	6,000	15,000	
Drivers	8	Y1 - Y20	6,250	-	
Laborers	5	Y1 - Y20	3,500	-	
 B. OPERATIONAL SERVICES					
<u>Extension Services</u>					
Field Officers			21,250	100,000	27,500 (3 units) ^{4/}
Assistant Field Officers I			13,750	20,000	4,000 ^{5/}
Assistant Field Officers II			8,750	15,000 ^{2/}	500 ^{6/}
Drivers			7,000	-	
					See Build-Up on Table 2
<u>Credit Collection Services</u>					
Senior Credit Officers			21,250	100,000	27,500 (3 units) ^{4/}
Credit Officers			13,750	20,000	500 ^{5/}
Drivers			7,000	-	
<u>Mechanization Unit</u>					
Inspector			15,000	100,000	
Foreman			12,000	20,000	
Field Officers			21,250	100,000	27,500 (3 units) ^{4/}
Store Clerks			7,000	15,000	
Mech. Gr. 1			10,000	20,000	
Mech. Gr. 2			8,000	15,000	
Mech. Gr. 3			6,000	-	
Mech. Gr. 4			5,000	-	

^{1/} Includes basic salary, pension fund and allowances.
^{2/} Housing provided to 20% of A.F.O. II.
^{3/} Pool of Four-wheel drive vehicles shared between Management and Technical Services.
^{4/} Four-wheel Drive Vehicles.
^{5/} Motorcycles.
^{6/} Bicycles.

TANZANIA

GEITA COTTON PROJECT

Build-Up of Extension, Credit Collection and Mechanization Staff

PROJECT YEAR	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11
CROP SEASON	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85
PHASE I AREA 1/												
<u>Extension</u>												
Field Officer		1	1	1	1	1	1	1	1	1	1	1
Assistant Field Officers I	1	1	3	4	5	4	4	4	4	4	4	4
Assistant Field Officers II	5	15	33	55	72	51	54	55	57	59	61	61
<u>Credit Collection</u>												
Senior Credit Officer		1	1	1	1	1	1	1	1	1	1	1
Credit Officers	5	16	16	16	16	16	16	16	16	16	16	16
PHASE II AREA 1/												
<u>Extension</u>												
Field Officer				1	1	1	1	1	1	1	1	1
Assistant Field Officers I			1	1	2	3	4	3	3	3	3	3
Assistant Field Officers II			4	14	32	47	51	38	39	41	41	43
<u>Credit Collection</u>												
Senior Credit Officer				1	1	1	1	1	1	1	1	1
Credit Officers			5	16	16	16	16	16	16	16	16	16
PHASE III AREA 1/												
<u>Extension</u>												
Field Officer					1	1	1	1	1	1	1	1
Assistant Field Officers I				1	2	3	4	5	4	4	4	4
Assistant Field Officers II				4	20	43	59	65	48	50	51	53
<u>Credit Collection</u>												
Senior Credit Officer					1	1	1	1	1	1	1	1
Credit Officers				7	23	23	23	23	23	23	23	23
TOTAL DISTRICT 1/												
<u>Extension</u>												
Field Officers		1	1	2	3	3	3	3	3	3	3	3
Assistant Field Officers I	1	1	3	5	9	10	12	12	11	11	11	11
Assistant Field Officers II	5	15	33	69	124	141	164	158	144	150	153	157
<u>Credit Collection</u>												
Senior Credit Officers		1	1	2	3	3	3	3	3	3	3	3
Credit Officers	5	16	16	32	55	55	55	55	55	55	55	55
<u>Mechanization 2/</u>												
Inspector			1(G)	1	1	1	1	1	1	1	1	1
Foreman						1(G)	1	1	1	1	1	1
Mechanical Field Officers							1(K)	1(S)		1(B)		
Store Clerks			1(G)	1	1	1	2(K)	3(S)	4(G)	5(B)	5	5
Mechanics - Grade I			1(G)	1	1	1	2(K)	3(S)	4(G)	5(B)	5	5
- Grade II			1(M/U)	1	2(M/U)	3(M/U)	3	4(M/U)	5(M/U)	6(M/U)	8(M/U)	10(M/U)
- Grade III				1(G)	1	1	2(K)	3(S)	5(G)	6(B)	6	6
- Grade IV			2(G,M/U)	2	3(M/U)	6(2G,1M/U)	9(K)	13(3S,1M/U)	14(M/U)	18(3B,1M/U)	20(M/U)	22(M/U)
Total Mechanics			4	4	7	11	16	23	28	35	39	43

1/ In each phase, both the extension service and the credit collection service have one driver.

2/ Symbol between parentheses refers to type of mechanical unit to which staff addition is made in year concerned:

G : Geita Central Workshop
 K : Karumwa Moveable Workshop
 S : Sengerema Moveable Workshop
 B : Bilulumo Moveable Workshop
 M/U : Mobile Unit

July 19, 1973

TANZANIA
GETA COTTON PROJECT
Incremental Production of Seed/Lint and Maize from Project 1/2/3/

PROJECT YEAR	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11
CROP SEASON	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85
PHASE I AREA												
<u>Cotton</u>												
Current Production: Seed Cotton (tons)	6,880											
Lint (bales)	12,540											
Incr. Production : Seed Cotton (tons)		590	1,720	3,350	5,180	6,480	7,520	8,420	9,250	9,900	10,390	10,590
Lint (bales)		1,080	3,140	6,110	9,440	11,810	13,710	15,350	16,860	18,050	18,940	19,310
<u>Maize</u>												
Current Production (tons)	9,360											
Incr. Production (tons)		1,520	4,640	8,530	12,490	14,480	14,970	15,520	16,070	16,620	17,160	17,300
PHASE II AREA												
<u>Cotton</u>												
Current Production: Seed Cotton (tons)	4,950											
Lint (bales)	9,020											
Incr. Production : Seed Cotton (tons)				530	1,530	2,990	4,110	4,940	5,660	6,290	6,850	7,280
Lint (bales)				970	2,790	5,450	7,490	9,010	10,320	11,470	12,490	13,270
<u>Maize</u>												
Current Production (tons)	6,730											
Incr. Production (tons)				1,370	4,370	7,630	9,720	10,510	10,900	11,300	11,700	12,100
PHASE III AREA												
<u>Cotton</u>												
Current Production: Seed Cotton (tons)	6,300											
Lint (bales)	11,480											
Incr. Production : Seed Cotton (tons)					810	2,290	3,940	5,320	6,370	7,280	8,080	8,770
Lint (bales)					1,480	4,180	7,180	9,700	11,610	13,270	14,730	15,990
<u>Maize</u>												
Current Production (tons)	8,550											
Incr. Production (tons)					2,090	6,180	10,000	12,400	13,410	13,920	14,420	14,930
TOTAL DISTRICT												
<u>Cotton</u>												
Current Production: Seed Cotton (tons)	18,130											
Lint (bales)	33,040											
Incr. Production : Seed Cotton (tons)		590	1,720	3,880	7,520	11,760	15,570	18,680	21,280	23,470	25,320	26,640
Lint (bales)		1,080	3,140	7,080	13,710	21,440	28,380	34,060	38,790	42,790	46,160	48,570
<u>Maize</u>												
Current Production (tons)	24,640											
Incr. Production (tons)		1,520	4,640	9,900	18,950	28,290	34,690	38,430	40,380	41,840	43,280	44,330

- 1/ "Current Production" refers to the total current production on the farms expected to join the Project.
2/ Quantities of Lint are expressed in 161 kg. bales.
3/ Yields are estimated at:

Farmer's year:	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8
Cotton (kg/ha)	500	700	825	900	950	1,000	1,050	1,075	1,100
Maize (kg/ha)	650	1,500	2,000	2,000	2,000	2,000	2,000	2,000	2,000

TANZANIA

GEITA COTTON PROJECT

Markets and Prices

Cotton

1. World demand for cotton remained weak throughout the late sixties, particularly in developed countries, where the general stagnation of the textile industry and strong competition from artificial fibers have limited cotton consumption. This effect was only partially offset by an increase in the utilization of cotton in developing and centrally planned countries. Between 1966/67 and 1971/72, world cotton production grew at an average annual rate of 0.9%, compared to 2.2% per annum in the preceding 11 years.

2. World cotton consumption is projected to grow at an average annual rate of 1.6% during the next ten years. This growth, although modest, presupposes that some further improvement in the quality composition of cotton and progress in promotional activity would take place and, furthermore, that no breakthrough in the production of artificial fibers would occur. World cotton production is forecast to grow at between 1.5% and 2.0% per annum through the 1970's, depending on possible cotton production policy changes in the two major producing countries, the U.S.A. and the U.S.S.R.

3. Cotton consumption in the Tanzanian textile industry is still only about 15% of total production. The bulk of lint production is therefore exported, mainly to Hong Kong, Mainland China and Japan. As Tanzanian cotton is of the medium-long fiber type, it appears unlikely that Tanzania will be able to greatly diversify its foreign clientele and the three above-mentioned countries will probably remain the main outlets.

4. Due to a temporary supply shortage, cotton prices began to rise during the 1971/72 season. When at the beginning of the 1972/73 year it became apparent that world cotton supply was going to be abundant, prices started to fall again. Later in the year, under the combined impact of a strong demand (the textile cycle had again turned upward) and unexpected heavy purchases from the People's Republic of China (an extra 1 million bales over previous levels), prices began to move up once more. Monetary uncertainties reinforced the speculative component already present in the cotton markets and prices reached Korean-war peaks towards the end of the 1972/73 season. Prices are expected to remain high in 1973/74 since, at the grower stage, cotton appears to be generally faced with its most severe competition in many years and unfavourable weather conditions in some key producing countries are likely to further reduce total cotton supply in the next season. The prevailing high cotton prices, however, are to be viewed as a temporary phenomenon, caused by a number of random factors which

upset the normal developments of world cotton demand and supply. It is therefore expected that the overall market balance will gradually improve beginning in 1974/75 and that equilibrium will be re-established at lower prices. For evaluation purposes, it was assumed that the 1974/75 c.i.f. price for Tanzania cotton would be around T#51 per lb in current terms.

5. By the end of the decade, cotton prices, in terms of Mexican SM 1-1/16 - a representative grade of medium-long staple cotton which usually accounts for over 60% of world cotton output - are expected to be some 5-7% below 1971/72 - 1972/73 levels. In 1980 dollar terms, Mexican SM 1-1/16 cotton prices are forecast to be around 38 US \$/lb, c.i.f. Liverpool. Expressed in 1973 constant dollar terms, this would correspond to a price of 29 US \$/lb. It can be reasonably assumed that a similar trend will be followed by Tanzanian cotton, for its quality is basically the same and past prices have been virtually identical. These prices have been used in the analysis.

The price of cotton seed charged to the millers by the Cotton Authority is tied to the ruling international price of cotton seed cake and the local price of cotton seed oil. The ex-mill price of oil has been fixed at Tsh 2700 per ton by the Government, which is roughly 20% above the international price. International prices of cotton seed oil are expected to drop to US\$274 per ton by 1980 from the present level of approximately US\$300 per ton. Demand for cotton oil in Tanzania and neighbouring countries will remain high in the future and marketing of Tanzanian cotton seed oil should therefore not be a problem.

7. An analysis of probable trends in handling, ginning and marketing costs has indicated that, given the foregoing price projections for lint and cotton seed oil, and on the assumption that annual production of lint would expand from its current level of 400,000 bales to 600,000 bales in 1980, the price to the farmer of seed cotton could be maintained at its present level in current terms over the period. For evaluation purposes, therefore, the price to growers has been kept at its present level of Tsh 1.13 per kg for AR and Tsh 0.60 per kg for BR over the Project period.

Maize

8. Over the last ten years, maize production in Tanzania has fluctuated around 600,000 tons per year and direct on-farm consumption has traditionally been the most important outlet for the product. It is estimated that, on the average, only about 25% of total production is marketed through the National Agricultural Products Marketing Board (NAPB), leaving an unknown but probably substantial volume of illegal sales. The high costs associated with the official marketing chain, which is characterized by a large number of intermediary links and a complex pricing structure, has created a large differential between producer and consumer prices. For the 1972/73 season, NAPB purchased maize from the Cooperatives at Tsh 390/ton and charged Tsh 460/ton

to the millers. The average price to the producer was Tsh 250/ton, while the processed product was made available to the consumer at about T~~4~~75/kg (Tsh 750/ton). This situation has undoubtedly provided an incentive for the farmer to sell his product through unofficial channels.

9. Until recently, marketed production has been broadly in balance with commercial consumption. There are indications, however, that commercial demand is now growing faster than production marketed through NAPB and it is expected that the growth of such demand will remain close to the present level of 4.5% per annum. In current terms, the international price of maize is expected to decline from today's high levels caused by current world shortages in food grains to about US\$63/ton f.o.b. (Tsh 440) by 1980. This is still about 13% above NAPB's current purchasing price from Cooperative Unions and 26% above the equivalent farm-gate price fixed by Government for priority areas of Tsh 350/ton. For non-priority areas, such as Geita, the price has been set at Tsh 300/ton. These levels are expected to be maintained in the future.

10. The Mwanza region is not self-sufficient in maize products and some shortages have occurred recently partly because of the illegal sales to Kenya of maize produced in the Mara region, traditionally the main supplier of the Mwanza region. Geita is the main maize producing district in the Mwanza region and great demand for incremental production there can be foreseen. Even at the high marketing costs prevailing on the official market, such maize could be made available at prices highly competitive with maize imported from other regions or from abroad. As suggested earlier, direct sales call for selling prices higher than those which can be secured on the official market and the new official producer price for maize of T~~4~~30/kg may be an under-estimation of what the farmer will actually be able to secure.

TANZANIA
GEITA COTTON PROJECT
Government Incremental Cash-Flow Projections from Program
(Tsh'000)

	Project Period							Y8	Y9	Y10	Y11	Y12	Y13
	Y1	Y2	Y3	Y4	Y5	Y6	Y7						
	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
1. Inflow													
IDA funds													
Incremental credit (through TRDB)	1,709	2,438	5,288	9,233	8,642	7,689	6,859						
Direct Project expenditures (through TCA)	10,123	5,053	6,915	6,459	4,487	5,878	4,086						
Roads and social facilities	<u>4,742</u>	<u>6,394</u>	<u>6,750</u>	<u>12,761</u>	<u>9,494</u>								
Sub-total	<u>16,574</u>	<u>13,885</u>	<u>18,953</u>	<u>28,453</u>	<u>22,623</u>	<u>13,567</u>	<u>10,945</u>						
Interest and principal repayments from loan to TRDB	72	197	261	478	726	3,959	3,959	3,959	3,959	3,959	3,959	3,959	3,959
Export duties on incremental cotton lint production from Project ^{1/}	144	391	818	1,417	2,021	2,518	3,022	3,441	3,796	4,095	4,309	4,400	4,400
Indirect taxes on farmers' incremental Project earnings ^{2/}	35	167	427	866	1,426	1,920	2,277	2,440	2,511	2,427	2,252	2,021	2,021
Income tax - Project wages and salaries ^{3/}	<u>546</u>	<u>601</u>	<u>751</u>	<u>831</u>	<u>892</u>	<u>746</u>	<u>750</u>	<u>730</u>	<u>757</u>	<u>768</u>	<u>784</u>	<u>790</u>	<u>790</u>
Total Cash Inflow	<u>17,371</u>	<u>15,241</u>	<u>21,210</u>	<u>32,045</u>	<u>27,688</u>	<u>22,710</u>	<u>20,953</u>	<u>10,570</u>	<u>11,023</u>	<u>11,249</u>	<u>11,304</u>	<u>11,170</u>	<u>11,170</u>
2. Outflow													
Disbursement of IDA funds above	16,574	13,885	18,953	28,453	22,623	13,567	10,945						
Government direct contribution to Program ^{4/}													
- Incremental credit (through TRDB)								2,702	2,719	2,909	1,873	1,045	-
- Project expenditures channelled through TCA	3,042	1,682	2,572	2,535	2,952	2,842	3,055	6,602	7,138	6,856	7,184	7,132	7,000
- Roads and social facilities	<u>2,465</u>	<u>3,560</u>	<u>4,162</u>	<u>8,146</u>	<u>5,967</u>								
Subsidies to TRDB for farmers' seasonal and short-term inputs	-	581	1,414	3,087	5,964	8,373	8,712	8,242	6,720	4,245	2,638	1,025	-
Sub-total	<u>5,507</u>	<u>5,823</u>	<u>8,148</u>	<u>13,768</u>	<u>14,883</u>	<u>11,215</u>	<u>11,767</u>	<u>17,546</u>	<u>16,577</u>	<u>14,010</u>	<u>11,695</u>	<u>9,202</u>	<u>7,000</u>
Service charge - IDA credit	21	93	136	264	407	579	743	886	936	936	928	919	909
IDA credit repayments											1,250	1,250	1,250
Total Cash Outflow	<u>22,102</u>	<u>19,801</u>	<u>27,237</u>	<u>42,485</u>	<u>37,913</u>	<u>25,361</u>	<u>23,455</u>	<u>18,432</u>	<u>17,513</u>	<u>14,946</u>	<u>13,873</u>	<u>11,371</u>	<u>9,159</u>
Net Cash Flow	(4,731)	(4,560)	(6,027)	(10,440)	(10,225)	(2,651)	(2,502)	(7,862)	(6,490)	(3,697)	(2,569)	(201)	2,011
Cumulative Net Cash Flow	(4,731)	(9,291)	(15,318)	(25,758)	(35,983)	(38,634)	(41,136)	(48,998)	(55,488)	(59,185)	(61,754)	(61,995)	(59,944) ^{2/}

^{1/} At 10% of TCA's incremental sales.

^{2/} Indirect taxes are at 12% of incremental earnings.

^{3/} Income taxes are, on average, at 18% of wages and salaries paid.

^{4/} It is assumed that Government meets full Program expenditures beyond year 5.

^{5/} By year 13 TRDB will have accumulated assets amounting to Tsh 41.4 million as a result of the project. Also, it can reasonably be assumed that, in the absence of the project, approximately 50% of total expenditures on roads and social facilities (Tsh 20.1 million) would have taken place anyway. This implies a real net cumulative cash inflow to Government of Tsh 25.6 million by year 13 as a result of the program, or Tsh 31.5 million if one accounts for the cumulative surpluses at that time of both TCA and TRDB.

TANZANIA

GEITA COTTON PROJECT

Rate of Return and Sensitivity Analysis

A. Rate of Return

1. The internal economic rate of return of the Project over a twenty-year period is estimated to be 14%. The cost and benefits used in this calculation are set out in Table 1. In calculating the economic rate of return, it is assumed that all incremental cotton lint production would be exported. Projected prices of lint c.i.f. Liverpool less freight and insurance are used, deflated by 5% a year from current prices. The returns are shadow priced at US\$1.00 = Tsh 10.00 to reflect the value to Tanzania of foreign exchange earnings. The TCA sales price has been used for cotton seed. Cotton seed oil is assumed to be consumed domestically. Maize is assumed to be produced for the internal market and is costed at farm-gate prices.

2. An element of savings on the cost of transporting cotton and maize as a result of road construction has also been included. Direct savings of Tsh 0.30 per vehicle km for 7-ton trucks are assumed on the basis of consultants' calculations for Tanzania conditions, and a 20% reduction of distance travelled is based on assumed improvements in road alignment. A 65% foreign exchange component is estimated for vehicle operating costs.

3. Costs exclude the costs of educational and health facilities, and 50% of the costs of road construction and the road survey. The benefits attributable to road construction represent only the direct saving in running costs of cotton and maize vehicles. Road user benefits are not included.

4. Physical contingencies of 10% are allowed on all investment costs, except for road construction where a 15% contingency allowance was used, and foreign exchange components are shadow priced. Labor is not shadow priced: there is no underemployment of the relatively skilled labor employed in the Project, and no costs are attributed to family labor used on farms. The only tax adjustment required is removal of income taxes on personal emoluments of Project employees. Costs have been taken as constant at estimated 1974 levels.

B. Sensitivity Analysis

5. The sensitivity of the internal economic rate of return of the Project to changes in some of the basic parameters used in the evaluation is shown below: these rates should be compared with a Project return of 14.5%.

<u>Variation</u>	<u>Rate of Return</u>
1. Schools and health facilities included	13.12%
2. 100% of the cost of roads included	10.25%
3. All costs increased by 5%	11.00%
4. All costs increased by 10%	7.57%
5. All costs decreased by 5%	18.00%
6. All costs decreased by 10%	21.73%
7. All benefits increased by 10%	21.03%
8. All benefits decreased by 10%	6.78%

TANZANIA
GEITA COTTON PROJECT

Economic Rate of Return
(TSh '000)

PROJECT/PROGRAM YEAR	Project Period											
	Y1 1974/75	Y2 1975/76	Y3 1976/77	Y4 1977/78	Y5 1978/79	Y6 1979/80	Y7 1980/81	Y8 1981/82	Y9 1982/83	Y10 1983/84	Y11 1984/85	Y 12-20 1985-94
A. Costs ^{1/}												
<u>Direct Project Costs</u>												
1. Seasonal inputs	1,475	3,362	6,966	12,847	17,061	19,609	20,683	20,683	20,683	20,683	20,683	20,690
2. Medium-term credit	460	903	2,064	3,973	5,808	7,779	9,877	6,538	7,781	9,419	10,779	10,780
3. Capital costs	8,381	879	4,003	3,726	1,433	1,522	1,431	639	1,036	551	808	810
4. Recurrent costs ^{2/}	3,272	3,550	4,172	4,524	4,738	3,976	3,988	4,102	4,275	4,389	4,472	4,480
5. Physical contingencies	1,359	869	1,721	2,507	2,904	3,289	3,598	3,237	3,458	3,626	3,821	3,824
Sub-total	<u>14,947</u>	<u>9,563</u>	<u>18,926</u>	<u>27,577</u>	<u>31,944</u>	<u>36,175</u>	<u>39,577</u>	<u>35,199</u>	<u>37,233</u>	<u>38,668</u>	<u>40,563</u>	<u>40,584</u>
<u>Related Costs</u>												
1. Road survey ^{3/}	1,223	369										
2. Road construction ^{3/}	1,739	3,266	4,181	7,683	5,593							
3. Physical contingencies	385	526	627	1,152	839							
Sub-total	<u>3,367</u>	<u>4,161</u>	<u>4,808</u>	<u>8,835</u>	<u>6,432</u>							
<u>Handling, processing and marketing costs of seed cotton ^{4/}</u>												
	278	782	1,699	3,178	4,794	6,346	7,615	8,674	9,567	10,321	10,860	10,969
Total Costs	<u>18,592</u>	<u>14,506</u>	<u>25,433</u>	<u>39,590</u>	<u>43,170</u>	<u>42,521</u>	<u>47,192</u>	<u>43,873</u>	<u>46,800</u>	<u>48,989</u>	<u>51,423</u>	<u>51,553</u>
B. Benefits												
1. Lint sales ^{5/}	1,931	4,997	9,976	16,505	22,493	28,016	33,626	38,294	42,245	45,570	47,948	48,987
2. Cotton seed sales ^{6/}	193	562	1,269	2,466	3,869	5,122	6,146	7,001	7,782	8,331	8,766	8,009
3. Maize sales ^{7/}	436	1,270	2,588	4,731	6,746	8,272	9,165	9,630	9,978	10,322	10,572	10,572
Sub-total	2,560	6,829	13,833	23,702	33,108	41,410	48,937	54,925	59,945	64,223	67,286	67,568
4. Transport savings ^{8/}	-	-	250	750	1,900	2,100	2,300	2,350	2,450	2,500	2,550	2,550
Total Benefits	<u>2,560</u>	<u>6,829</u>	<u>14,083</u>	<u>24,452</u>	<u>35,008</u>	<u>43,510</u>	<u>51,237</u>	<u>57,275</u>	<u>62,395</u>	<u>66,723</u>	<u>69,836</u>	<u>70,118</u>
Rate of Return : 14.45%												

1/ Foreign exchange component shadow priced at TSh 10 to the US\$ (market rate is at TSh 7.14 per US\$).

2/ Net of income taxes on salaries paid (18% of total wage amount).

3/ 50% of total cost of road construction and the road survey included.

4/ Costs to Societies, Unions (covered by levies and ginning fees) and to T.C.A. These costs are not covered by the Project.

5/ F.O.B. price Dar-es-Salaam based on expected international prices of lint, assuming insurance/freight costs expressed in 1973/74 prices of TSh 112 per bale. It is assumed that all incremental lint production from Project would be exported and corresponding sales have therefore been shadow priced at above shadow foreign exchange rate. Export duty of 10% of TCA's sales is included.

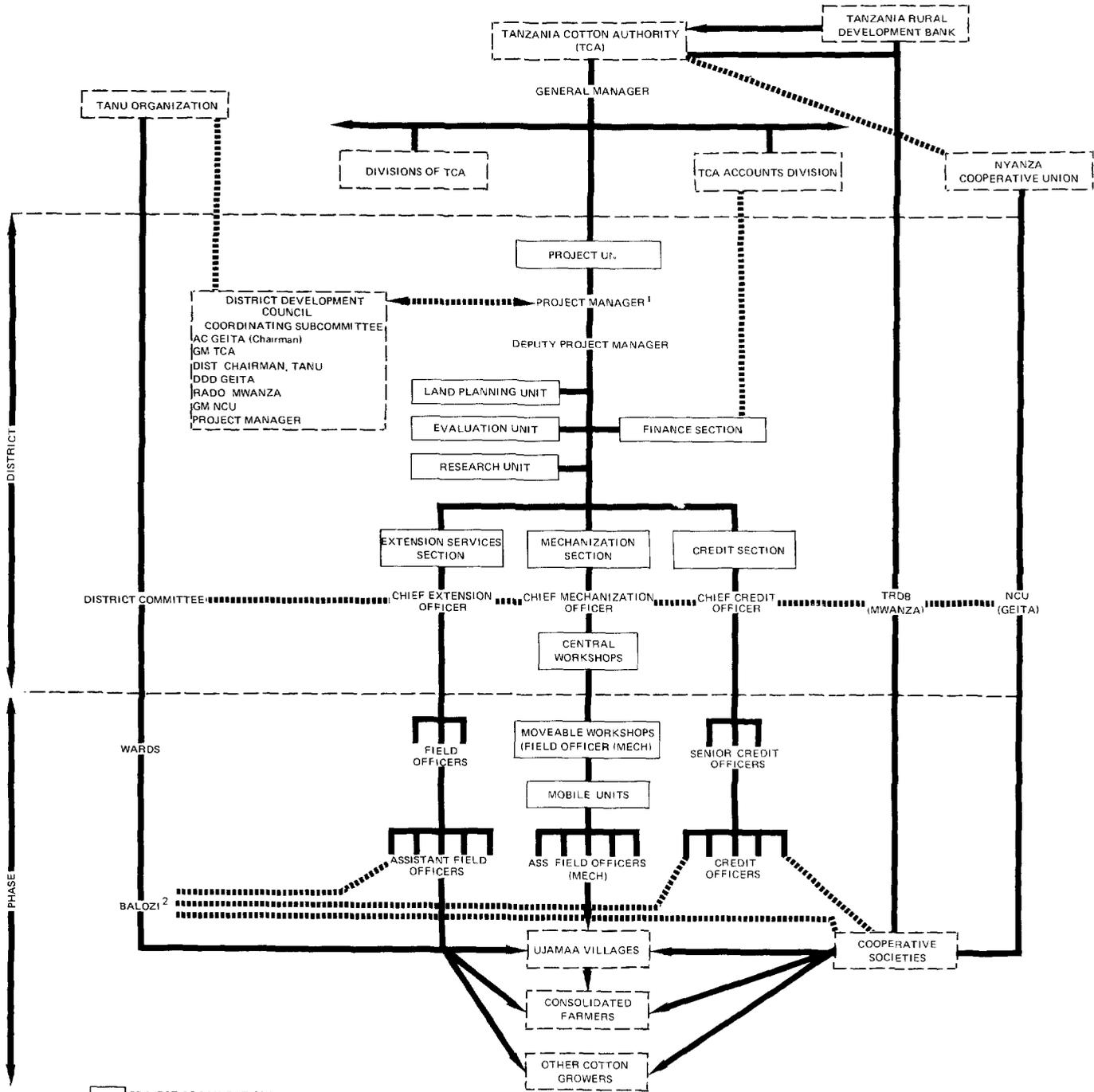
6/ Based on TCA's current selling price for cotton seed of 450 TSh/ton. It is assumed that 90% of the cotton seed generated by the Project would be sold to the millers for crushing and that 50% of the corresponding revenues would be in foreign exchange.

7/ At current farmgate price of TSh 300/ton.

8/ Tentative, pending consultants' findings and includes only direct savings on costs per km. of cotton and maize transportation and savings from reduced distances travelled (20%) on new roads. Derived from estimated annual production, and use of 7 ton trucks at 1.50 per vehicle km. before improvement and 1.25 per km. after improvement. Foreign exchange component 65%.

11

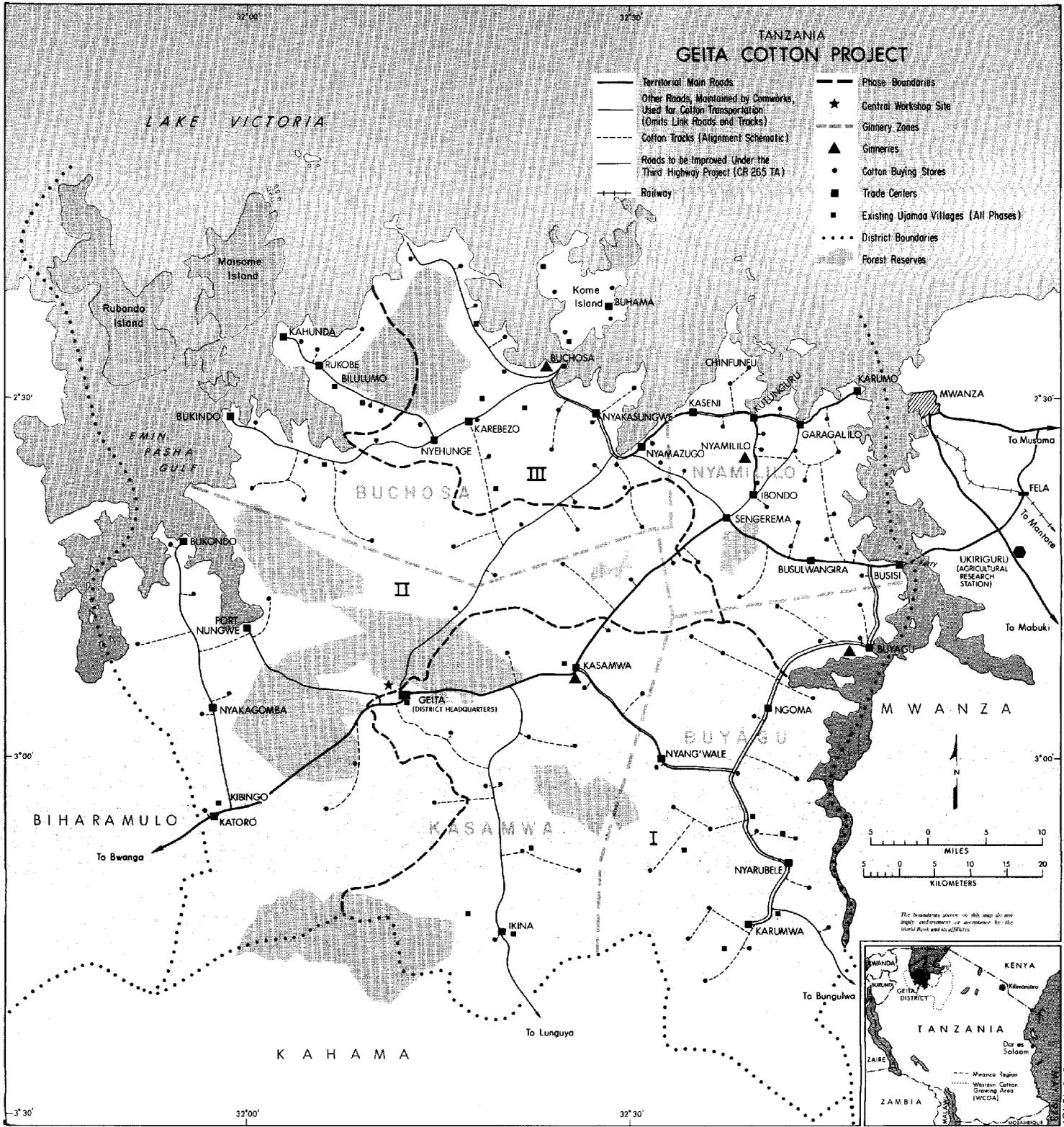
TANZANIA
GEITA COTTON PROJECT
PROJECT ORGANIZATION



- ▭ PROJECT ORGANIZATIONS
- ▭ NON-PROJECT ORGANIZATIONS
- LINES OF COMMAND
- ⋯ CO-ORDINATION/COOPERATION

¹ World Bank has principal responsibility for extension and the land use planning, evaluation, and research units
² Tanu ten cell chairman

TANZANIA
GEITA COTTON PROJECT



The boundaries shown on this map do not imply endorsement or acceptance by the World Bank and its affiliates.

