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INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PERFORMANCE AUDIT REPORT

ON

EAST AFRICAN COMMUNITY FIRST AND SECOND TELECOMMUNICATIONS PROJECTS

(LOANS 483-EA and 675-EA)

October 21, 1975

Operations Evaluation Department

PREFACE

This report presents the result of a performance audit on the projects supported by Loans 483-EA (February 1967) and 675-EA (May 1970), the first two loans by the Bank to the East African Community for telecommunications services development in the partner states of Kenya, Tanzania and Uganda. They have been followed by Loan 914-EA (1973), and a fourth project is expected to be appraised shortly. The audit is based on the projects' appraisal reports, a brief project completion report prepared by the Bank in May 1974 for Loan 483-EA, a two-week mission to East Africa in January 1975, discussion with relevant Bank officials and review of Bank files. Loan 483-EA became fully disbursed in June 1973; Loan 675-EA was almost fully disbursed in June 1975.

Currency Equivalents:

US\$ 1.00 = EA Sh7.14 (1967-1973)

US\$ 1.00 = EA Sh6.90 (1973-1974)

Fiscal Year = Calendar Year

PROJECT PERFORMANCE AUDIT REPORT

EAST AFRICAN COMMUNITY TELECOMMUNICATIONS PROJECTS
(Loans 483-EA and 675-EA)

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SUMMARY

Loans 483-EA (US\$ 13.0 million equivalent) and 675-EA (US\$ 10.4 million equivalent, supplemented by a Swedish credit for US\$ 5.2 million equivalent) supported the expansion and improvement of East African Posts and Telecommunications Corporation (EAPTC) telecommunication services in the periods 1966-70 and 1971-72 respectively. The projects consisted mainly in a large expansion in urban local telephony, improvements of long distance telephone services including the introduction of subscriber trunk dialing (STD) from the main cities, and automatization and expansion of the telex network. Special provisions in loan agreements were addressed to maintaining financial viability, orienting EAPTC towards commercial accounting and management, improving substantially EAPTC's organization and tying increases in staffing expenditure to actual system growth achievements.

Procurement under both loans experienced substantial delays, mainly due to severe staffing and management problems, difficulties experienced in adapting to modern switching technology, expansion in 1968 of the project under the first loan (as a result of lower than expected equipment prices and higher than forecasted demand), need to re-tender for part of the second project's equipment, and slow progress of some civil works. Closing date of the first loan was therefore postponed by two years (to September 1973), and the second loan is likely to close eighteen months late (December 1975).

The actual costs of the first project were approximately US\$ 800 per net main telephone line added into service, which is 34% below appraised estimates. This was mainly achieved by a foreign component cost per line added 43% below initial estimates, believed to be to a considerable extent the outcome of procurement through competitive international tenders instead of the previously used system of negotiated bulk supply.

Under the second project, however, unit costs reached approximately US\$ 1,700 per main telephone line added into service or 22% above appraised estimates (both figures after correcting for cost of spare long distance capacity built). This was mainly due to changes in currency parities, increases in international market prices, higher salaries and wages, and choice of unduly expensive solutions for some civil works. Due to those substantial cost overruns, only 30% of the intended local telephone switching equipment could be bought and the Bank agreed to finance the balance (to a cost of US\$ 2.6 million equivalent) out of the third loan (914-EA); there remained a balance of approximately US\$ 1.7 million equivalent to be met by EAPTC.

The unit costs of the second project are 115% above those achieved under the first one. In addition to the substantial second project's cost overruns, this reflects the introduction of modern long distance facilities well beyond what was included under the first project.

In 1966-74 East Africa's telecommunication services expanded and improved very significantly, mainly the outcome of the two projects. Nevertheless, considering the targets under the successive projects, overall construction in 1966-mid 1975 has been somewhat low with main shortfalls in number of long distance circuits (49% low) and in the connection of new subscribers to existing exchange capacity (21% low). Subscriber trunk dialing was introduced prematurely in relation to

expansion of long distance capacity. Growth forecasts for telephone connections demand and traffic have been repeatedly and substantially low. The combined result has been an increasingly wide gap between demand and supply for connections and severe congestion of telephone calls which has reached intolerable levels; congestion is causing poor service quality to users, accelerated wear of equipment and probably substantial losses of revenue.

Throughout the projects, EAPTC centered its efforts on the urban and inter-urban services but maintained a relatively significant (though not explicit) concern for the rural areas bringing to them important benefits.

Tariff levels have been adjusted several times to maintain an acceptable financial position in the face of rising costs, to the extent that EAPTC's services have become one of Africa's most expensive. EAPTC's financial performance has been generally satisfactory and internal self-financing high.

The ultimate limitations to telecommunications expansion and improvement over the two projects have been EAPTC's planning, design, installation and managerial capacity.

Staffing difficulties have troubled EAPTC permanently and have affected both the specific projects themselves and consolidation of EAPTC as a modern organization. To a considerable degree this was due to their heavy initial dependence on European expatriates at senior engineering and management levels, and on Asians at intermediate levels. This tended to be self-perpetuated by the inherited character of the organization, centered in foreigners rather than nationals; the Bank contributed to this by including in the first loan agreement a covenant requiring to keep the number of expatriates up as needed for good performance, without adding in either loan's documents any provisions addressed to fast growth of African competence and early transfer of all posts to them. This was made worse by the unexpected loss of almost the whole medium cadre of Asians.

Heavy reliance on non-Africans was a determining factor in two major staff crises (1970 and 1972) which brought EAPTC almost to a complete halt. Training facilities have been EAPTC's and the Bank's frequent concern, and "Africanization" of junior professional posts and lower is well advanced; but it was only after the major staff crises that sound measures were taken toward the transfer of all senior posts to Africans. Africanization of EAPTC is likely to be completed by 1978 except for some posts for which adequate staff will not be available before 1980 or so.

The second loan agreement included a staff limiting covenant aimed at keeping within bounds the wages and salaries bill. While staff numbers have remained within the limit, similar results were obtained before the covenant as well. Further, average wages and salaries increased far above expected levels and so the ultimate purpose of the covenant has not been achieved.

During the projects, EAPTC's organization changed substantially, in line with loan covenants, in order to improve telecommunications operations. Nevertheless, implementation of the organizational strengthening has been only partly achieved and important functions (especially in relation to long range planning) are either unmanned or staffed only temporarily. At the same time, new weaknesses arose as a consequence of rapid growth and have not yet been overcome; circumstantial

management troubles added further problems on several occasions. Due to central accounting being split between Nairobi and Kampala, 1972 accounts were produced 15 months late and 1973 accounts will be some 10 months behind schedule.

In spite of its many shortfalls, EAPTC must be regarded as having performed meritoriously, given the enormous institutional problems with which it has been continuously confronted.

Overall impact of the Bank has been very significant. Guidelines for procurement have generally been adhered to. Competitive international tenders became a normal way of procurement with considerable benefits to EAPTC. Missions, averaging about one every ten months, not only supervised the projects but also gave effective assistance on specific problems. Nonetheless, in addition to the aspects already discussed, the Bank could have done more. The Bank showed little concern for the economic aspects of the projects: there was no economic justification of the first one, both were appraised with insufficient attention to EAPTC's role in the countries' development, and key issues recognized by Bank economic studies in East Africa did not reflect on appraisals or later. Tariffs were treated by both EAPTC and Bank solely as a means to raise revenues; neither dealt with the broader economic issues, such as relating tariffs to the cost structure and to specific philosophies of services development, nor looked into possible immediate practical implications of alternative pricing schemes. Progress reporting requirements were initially too complex, and deadlines for submitting audited accounts were incompatible with the Community's accounting calendar. Procurement matters could have been handled somewhat better: bid evaluation procedures should have been developed to include systematically the main quantifiable non-price costs of innovation and to deal with any unusually large risks associated to specific bidders; negotiated expansions of existing equipment up to their design limits should have been established from the start as norm rather than exception, provided prices were shown reasonable.

A long conflict arose between Bank and EAPTC on how a necessary degree of standardization of telephone switching equipment could be achieved while following the Bank's requirement for competitive procurement. EAPTC made one serious engineering error and also incurred undue diversification of types of exchanges, with significant costs in additional interworking equipment and some lasting incompatibilities; although EAPTC blamed for a long time these problems on the Bank's requirement for competition, they were in fact caused mainly by EAPTC's lack of sound system planning, vacillating and insufficiently objective decisions on switch type, and unwillingness to adopt Bank's advice on increasing the scope of tenders. But the Bank could have helped more if it had not adopted at first an unduly conservative position on switching technology, and given a larger effort on technical and procurement matters in the early stages; the problem appears to have been that it did not have its own telecommunications operations well established at the time. Finally EAPTC was and remains weak in its planning ability which, combined with other factors and the EAPTC's way of initially understanding the Bank's requirements for competitive procurement, provided a context within which the Corporation became vulnerable to the indiscriminate introduction of unduly high variety of equipment; it is not certain how much more the Bank could have helped to prevent this by taking a stronger stand given EAPTC's condition.

PROJECT PERFORMANCE AUDIT REPORT

EAST AFRICAN COMMUNITY FIRST AND SECOND TELECOMMUNICATIONS PROJECTS (Loans 483-EA and 675-EA)

Introduction

1. The postal and telecommunications services of Kenya, Tanzania and Uganda were amalgamated in 1933 into the East African Posts and Telecommunications Department which in 1948 became a service of the East African High Commission. This arrangement continued under the East African Common Services Organization (EACSO) until 1967, when it became the East African Posts and Telecommunications Corporation (EAPTC) of the East African Community in the context of that year's Treaty for East African Cooperation. The EAPTC, which operates under the East African Posts and Telecommunications Act (a law of the Community) has a monopoly of postal, telephone and telegraph services in East Africa. Communications with other countries are since 1964 the responsibility of East African External Telecommunications Company Ltd. (EXTELCOM) of which EAPTC held 60% of shares until it acquired the balance in 1974. The Communications Council is the East African Community telecommunications policy body and, among other things, approves EAPTC's development plans, changes in tariffs, and borrowings.

2. The Borrower of the first loan was the East African Common Services Authority and the Beneficiary was the EAPT Administration. From January 1968, the EAPTC became Borrower and Beneficiary of both loans. Guarantors to both loans were the Governments of Kenya, Tanzania and Uganda.

3. Contacts towards a first telecommunication loan to East Africa began early in 1965. The project was appraised in October 1965 and the draft appraisal report was issued in February 1966 and considered by the Bank's Loan Committee in April 1966; negotiations took place in May 1966. The loan, for US\$ 13.0 million equivalent,^{1/} was approved by the Executive Directors in January 1967, signed in February 1967 and became effective in May 1967.

4. The project for the second loan was appraised in August 1969 and the draft appraisal report was issued and considered by the Loan Committee in November 1969; negotiations took place in December 1969. A joint financing agreement, whereby a Bank loan of US\$ 10.4 million equivalent was complemented by a credit by the Kingdom of Sweden for US\$ 5.2 million equivalent, was approved by the Executive Directors in May 1970. The agreement was signed in the same month but became effective only in November 1970.^{2/}

^{1/} East Africa had originally requested only US\$ 11.2 million equivalent, but the appraisal mission considered US\$ 13.0 million to be more adequate in order to ease EAPTC's expected cash position in 1970. In that year EAPTC had to pay East African High Commission stock in sterling, the sinking fund for which was underprovided by approximately £ 1.9 million.

^{2/} Characteristics of both loans are summarized in Annex 1.

5. The long periods between negotiation of the loan and presentation to the Board (eight and five months, respectively) were mainly due to delays in completing legislative action in East Africa, necessary for the countries to become guarantors of the loans. The delays between loan signature and effective date (three and six months, respectively) were mainly due to the time required by the East African countries to complete necessary formalities (e.g., submit legal opinions to the Bank), this being made worse in the second loan by the simultaneous involvement of seven parties (the Governments of Kenya, Uganda, Tanzania and Sweden, the East African Community, EAPTC and the Bank) in the joint agreement.

6. The first project consisted mainly in a substantial expansion of the local telephone services in the main cities, improvements in the long distance network, and automatization and expansion of the telex system. Later it was modified, mainly increasing further local telephony and telex capacity. The second project was addressed principally to the continued expansion of local telephony, substantial improvement of the long distance system (including the construction of a high capacity microwave network connecting Kampala, Nairobi, Mombasa and Dar es Salaam), and introduction of subscriber trunk dialing (STD) among the main cities.

7. Both loan agreements contained the usual covenants found in telecommunication projects financed by the Bank. In addition, the first loan had covenants and supplementary letters aimed especially at maintaining financial viability including pre-independence obligations, orienting the Corporation towards commercial forms of accounting and management, improving some organizational weaknesses, and ensuring sufficient competent staff to sustain good standards of performance. Under the second loan, special covenants and supplementary letters were mainly addressed to the need to reorganize the Corporation substantially in order to bring all telecommunication functions within a single department, and to limit staff increase by relating it to actual system growth achievements.

Project Implementation

8. Procurement under the first loan progressed at a rapid pace in the first year after it became effective; about one-half the loan was committed by the end of 1967. This was partly due to the Bank having accepted to finance the project retroactively from May 1966. Significant delays were experienced subsequently. They were mainly due to slow progress of EAPTC in deciding on innovations in telephone switching technique and in drafting these bid specifications, substantial staff problems, and delays in some deliveries. Another significant factor was the expansion of the project size, made necessary and possible by the joint occurrence of connections and traffic demand well above expectations and international bid prices lower than initially estimated; this led to an approved change in project description in 1968 expanding the original project by 47% in the net increase of telephone exchange lines capacity and by 256% in the increase in telex capacity. These delays and expansions led to two successive extensions of the project execution period, which finally closed on September 30, 1973 (two years later than originally intended) partially overlapping EAPTC's 1971-72 and 1973-75 programs, respectively supported by the second and third Bank loans (675-EA and 914-EA).

9. Procurement under the second loan and Swedish credit suffered from substantial initial delays. By mid- 1972 procurement was late by approximately 18 months, partly due to EAPTC's staffing and management problems which will be discussed later and partly to slow progress of the buildings and civil works program. Important delay was also associated with tenders for microwave equipment (which was a major component under the second project); EAPTC disqualified the lowest bidder on a technicality (against Bank advice) and then the favored supplier attempted to impose unacceptable contract conditions; this led to re-tendering, thereby retarding considerably the expansion of long distance facilities. In 1972 the original construction schedule was revised to take these slippages into account. Subsequent progress was in line with the new schedule or slightly ahead of it. By the end of 1974 the project was complete except for approximately 4,000 lines of expansion of local switching equipment and completion of the Nairobi trunk switching center. Both these components are expected to be completed in 1975. The closing date has been extended to December 1975 to accommodate small disbursements outstanding.

10. The actual costs of the first project, relative to the amounts of new services effectively provided, have been well below initial estimates (especially the foreign exchange component of the telephone segments) and probably compare favorably with those in most developing countries. However, actual costs of the second project, relative to the amounts of new services effectively provided, are well above appraised estimates.

11. Appraisal and final cost estimates for the two projects are given in the table below.

Table 1: SUMMARY OF PROJECTS COSTS

	<u>First Loan (483-EA)</u>			<u>Second Loan (675-EA)</u>		
	<u>US\$ mln equivalent</u>		<u>Increase</u>	<u>US\$ mln equivalent</u>		<u>Overrun</u>
	<u>Appraised</u>	<u>Final</u>		<u>Appraised</u>	<u>Final</u>	
Local	8.61	13.7	59%	12.7	15.2 ^{/a}	20% ^{/a}
Foreign	<u>18.06</u>	<u>19.8</u>	<u>10%</u>	<u>15.6</u>	<u>19.9</u>	<u>28%</u>
Total	26.67	33.5	26%	28.3	35.1	24%

/a Tentative.

12. Final local cost estimates for the first project are only approximate as it is difficult for EAPTC to separate costs from several partially overlapping projects. The final total cost is 26% above original estimates but the latter refer to the original project before expansion. The final cost of telephone expansion (including both local and long distance facilities) was approximately US\$800 per net main line added into service. The appraisal estimates would have resulted in a cost of approximately US\$1,200 per net main line added

into service.^{1/} Thus, telephone expansion unit final costs have been approximately 34% below initial estimates. The total foreign exchange component of the whole first project is 10% above appraisal. But when expressed as the foreign exchange component per net main telephone line added into service, it is 43% below appraisal figures. A large proportion of this reduced unit cost can be attributed to the adoption of full international bidding in place of the former practice of negotiating purchases with a few fixed suppliers, on which was based the appraised cost estimates. The final local currency component of the whole first project is 59% above appraisal. When expressed as the local currency component per net main telephone line added into service, it is 16% below appraisal figures. This was achieved in spite of significant increases in EAPTC's salaries and wages. All these figures include some improvements of service quality to existing subscribers.

13. The cost analysis for the second project is hampered by the present absence of sufficient information of local costs at EAPTC. It is known, however, that considerable local cost overruns have been incurred, in items such as construction of concrete microwave towers,^{2/} salaries and wages, casual labor, vehicles operating expenditure, staff housing, etc. EAPTC have provisionally calculated that unit local costs of telecommunications expansion and improvement increased in 1973 by approximately 15% and that the figure for 1974 may be over 20%. This could well mean that local costs for the entire project are 20% or more above appraised figures, but a proper estimate cannot be expected from EAPTC until late 1975 or mid-1976 once the accounts are up to date. Foreign exchange costs also exceeded appraised estimates substantially, mainly due to changes in currency parities, increases in international market prices, and need to provide additional switching equipment to handle a higher traffic than originally expected. Expenditure of US\$8.1 million equivalent on microwave, VHF/UHF, and multiplex equipment (loan category IV) has been 37% over appraised estimates and represents the main foreign cost overrun in the project. As a result of these increased expenditures, only 6,200 lines of local telephone switching equipment could be purchased out of the second loan and Swedish credit, instead of 21,000 lines as planned. The Bank agreed to finance the balance (14,800 lines, costing US\$2.6 million equivalent) out of the third loan (914-EA). There remains a balance of approximately US\$1.7 million equivalent to be financed by EAPTC, bringing the total foreign component

1/ All unit costs are calculated based on the following assumptions. Telephone expansion cost equals total project cost less telex and telegraph expansion cost. In appraised estimates, contingency, buildings and land, and overhead costs are allocated proportionally to other costs. Final telex and telegraph foreign costs equal expected foreign costs plus all expected foreign contingency cost (this is roughly how the approved project enlargement in telex was financed). Final telex and telegraph local costs assumed 20% over appraised estimates (including share of local components of contingencies, buildings and land, and overheads). If the original project would have been carried out, the fill of the added telephone exchange line capacity would have been 80%. Expansion of long distance network includes no spare capacity available for future projects.

2/ EAPTC now recognize that the choice of concrete (rather than steel) towers was an engineering error (taken against advice of a Bank mission and leading to unduly high costs and construction times).

overrun to some US\$4.3 million equivalent, or 28% of the appraised estimate. All included, the final cost of telephone expansion (considering both local and long distance facilities) is estimated to reach US\$2,000 per net main line added into service, which is 25% above the unit cost derived from appraisal estimates (US\$1,607). These figures include the full costs of the new microwave backbone system, which has considerable spare capacity to be used in subsequent expansion projects. Adjustments to account for this fact lead to estimate the final cost of telephone expansion under the second project at approximately US\$1,720 per main telephone line added into service, 22% above appraisal estimates (US\$1,405)^{1/} and 115% above that achieved in the first project.^{2/ 3/} All these figures include some improvement of services (especially long distance to existing subscribers.

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- 1/ Figures are calculated on the following assumptions. All final local costs 20% higher than at appraisal. Telephone expansion cost equals total project cost less telex costs. Foreign final costs of telex equal actual disbursements under second loan and Swedish credit. Number of net new lines actually added into service under project is 21,000 lines times incremental exchange fill in period 1970-74 (80%). Number of net new lines expected at appraisal to be added to service under second project could have been 21,000 lines times 80% exchange fill. 30% of final foreign costs of microwave multiplex equipment (and related expenditures) is allocated to future projects, as well as 70% of final foreign costs of microwave bearers (and related expenditures); this results in a 43% reduction of final foreign costs under category IV. The same 43% reduction is assumed to apply to appraised estimated costs of category IV.
- 2/ Recent Bank economic studies on East Africa report labor in the modern sectors to be greatly overpriced, and foreign exchange to be underpriced. On both accounts, estimates of local project costs expressed in US\$ overstate real cost. Assuming one-third of local project cost is in labor overpriced by 50%, and that foreign exchange is 20% underpriced, local costs per telephone line added (corrected for spare long distance capacity) drop by 30% and the total unit cost by 14% (from over US\$1,700 to less than US\$1,500). This suggests that price distortions may affect radically the analysis of local cost variations, but do not alter the conclusion that East African total unit costs are rising rapidly.
- 3/ Although a substantial part of this greater unit cost in the second project (as compared to those achieved in the first one) is in cost overruns, it also reflects the fact that under the second project the long distance facilities were automated and modernized extensively well beyond the scope of the first project, and expanded to handle higher traffic.

System Development

14. In the period 1966-74, East Africa's telecommunication services expanded and improved significantly, largely the outcome of the two projects. The table below summarizes some of the aspects of the system's growth.^{1/}

Table 3: SUMMARY OF SYSTEM GROWTH 1965-75

December 31	Telephone Exchange Lines Capacity	Telephone Sub- scribers in Service	Telephones in Service (All Stations)	Tele- phone Waiting List	Telex Sta- tions in Service	Long Distance Network Telephone Channels
	----- thousands -----				----- units -----	
1965	57.0	47.9	95.5	4.3	105	1,145
1966	60.2	51.0	103.2	6.7	175	1,194
1967	62.1	53.4	111.2	9.4	218	1,378
1968	67.8	58.1	120.1	11.3	295	1,567
1969	76.9	60.1	131.5	15.5	326	1,761
1970	87.3	64.5	143.7	17.6	340	1,803
1971	100.4	71.5	159.5	20.1	374	1,993
1972	108.4	77.6	172.7	22.6	514	2,117
1973	112.7	85.3	194.4	25.7	743	2,236
1974	116.4	91.8	214.7	36.1	900	2,438
mid-1975/a	137.8	96.2	225.1	43.3	990	2,587

/a EAPTC estimates prepared February 1975.

15. Telephone local exchange capacity grew at a net cumulative rate of 8% p.a. but due to temporary changes in the demand pattern and some delay in the construction of external and subscribers plant, the net increase of numbers of subscriber lines in service has been only 7% p.a., and total exchange fill has fallen from 84% in 1965 to 79% in 1974. Telephones (all stations) have increased at 9% p.a., thus increasing somewhat the already high telephones/line ratio from 2.0 to 2.4. Telephone density (all stations per 100 inhabitants) for the whole East African Community improved from 0.33 (1965) to 0.56 (1974); by the end of 1972 the density (0.47) was comparable to those of Mozambique (0.57) and Angola (0.56), above Ethiopia (0.21) and Zaire (0.11) but below Zambia (1.28) and Rhodesia (2.6).

1/ More details are given in Annexes 2 and 3.

16. But although telephone exchange capacity and subscriber lines have increased substantially, overt demand (subscriber lines in service + waiting list) has outgrown supply (subscriber lines in service) in absolute and relative terms. The following table illustrates this:

Table 4: EVOLUTION OF SUPPLY-DEMAND BALANCE
FOR TELEPHONE CONNECTIONS, 1965-74

December 31	Net New Supply as Fraction of Previous Year-end's Waiting List (%)	Waiting List Equivalent in Past Net New Supply (Years)	Total Supply as Fraction of Overt Demand (%)
1965	-	-	92
1966	73	2	88
1967	35	3	85
1968	50	3	84
1969	18	5	80
1970	28	5	79
1971	40	5	78
1972	35	5	77
1973	34	4	77
1974	26	6	72

The figures have deteriorated continuously over the period and reflect a growing and already excessively large gap between supply and overt demand.^{1/}

17. In 1966-74 the long distance transmission network expanded in capacity, coverage, and quality of circuits. Telephone subscriber trunk dialing (STD) became available in 1969 for automatic outgoing calls from Nairobi, and in 1970 from Kampala and Dar es Salaam; by the end of 1974 approximately 65% of subscribers in East Africa had STD outgoing facilities and all automatic subscribers (82% of the total) could receive STD calls. Since completion of microwave facilities, construction of additional long distance switching centers has lagged behind, so full utilization of the former is only gradually being achieved. Automatic telex was brought into service in 1972 replacing the existing manual system and providing for future expansions up to a total of 1,700 subscribers. International services were greatly improved with the opening of East Africa's satellite earth station in 1970.^{2/}

^{1/} Hidden demand in the business sector was reported by a supervision mission and it is also likely to exist in the residential sector, but there are no quantitative estimates available.

^{2/} Not financed by the Bank.

18. The projects under the successive Bank loans have been tranches of the continuous expansion and improvement of East Africa's telecommunications services. Although for the second project a construction schedule was established at the time of appraisal and subsequently updated, no schedule was given for the first project. Besides, projects have had their completion dates extended substantially to allow for expansions and delays. Thus the works under Loans 483-EA, 675-EA and 914-EA overlapped each other considerably and actual construction progress cannot be compared with each project's schedules separately but must be seen in terms of the successive expectations laid out for the ensemble of projects. In this light, 1966-1974 overall construction has been somewhat below targets, with important shortfalls in the growth of number of long distance circuits and, to a lesser extent, in the actual connection of new subscribers to the available exchange capacity.^{1/} The table on the following page shows this.

19. Successive forecasts have substantially underestimated growth of both telephone connections demand and traffic. Added to construction shortfalls, the result has been a widening gap between connections supply and overt demand, and building up of congestion up to intolerable levels made worse by premature introduction of STD (against advice of a Bank mission).

20. At the first project's appraisal, a 6% p.a. growth of telephones was forecasted. Soon this was seen to be too low an estimate and the project was modified using 8% p.a. At the second project's appraisal, a figure of 8-1/2% was taken for growth in overt demand for telephones but a 12% growth of supply was chosen as a target in order to reduce by the end of 1972 the waiting list to 8% of lines in service (or about one year's net supply). In practice, overt demand in 1966-74 has been growing at 8.4% to 15.3% p.a. (10.5% cumulative), thus running well ahead of successively corrected estimates. The result has been that by the end of 1972, the waiting list had increased to almost the last five years of net increase of lines in service and was equal to 30% of lines in service.^{2/} Initial estimates were based on post-independence growth data and this has later been recognized as reflecting an unusually stagnated period of East African activity, although there is some reason to suppose that these estimates were roughly in line with international experience at that time.^{3/}

21. Based on a 6% growth of connections demand, 8% growth in traffic

^{1/} Shortfalls discussed here are net after successive adaptations of targets to actual achievements.

^{2/} The situation deteriorated further. By the end of 1974 the waiting list was equivalent to the last six years of net increase in lines in service and was equal to 40% of lines in service.

^{3/} The regression equation in Chapter 3, p. 10 of CCITT's "Economic Studies at the National Level in the Field of Telecommunications" (I.T.U., 1972) refers to telephone densities relative to GDP per capita in 1954-68 for a number of countries. Using Kenya population and GDP growths for 1964-68, this equation would have predicted also 6% p.a. growth (of supply, though, not overt demand). Thus possibly the initial choice of 6% p.a. was not out of line with contemporary international experience.

Table 5: CONSTRUCTION ACHIEVEMENTS AND EXPECTATIONS

		Original	Enlarged	Whole	Whole	Actual as % of forecast
		first project <u>/a</u>	first project <u>/b</u>	first & part of second project <u>/c</u>	first & second projects & part of third project <u>/d</u>	
		1966-1970	1966-1970	1966-1973	1966-mid-1975	
				Absolute		
Net increase in tele- phone exchange capacity (no. of lines)	Fore.	26,050	38,300	58,150	85,600	
	Act.	30,340		55,770	80,810	94%
Net increase in tele- phone lines in service	Fore.	16,300 <u>/e</u>	23,746 <u>/f</u>	48,394	60,900	
	Act.	16,610		37,380	48,300	79%
Net increase in trunk circuits	Fore.	748	748	2,740 <u>/g</u>	2,809 <u>/h</u>	
	Act.		658	1,091	1,442	51%
Net increase in telex lines capacity	Fore.	450	1,600	1,600	1,600	
	Act.	n.a.		1,605	1,605	100%
Net increase in telex lines in service	Fore.	n.a.	n.a.	n.a.	1,065	
	Act.		235	638	885	83%

All net increases referred to December 31, 1965.

/a Forecasts as in 483-EA appraisal report.

/b Forecasts as in modified description of 483-EA.

/c Forecasts as in 675-EA appraisal report. No distinctions made between September 1973 (forecasts) and December 1973 (actuals).

/d Forecasts as in 914-EA appraisal report. Mid-1975 forecasts derived from end-1975 forecasts by subtracting one-half of expected average annual growths. Actuals for mid-1975 estimated by EAPTC in February 1975.

/e 483-EA's appraisal report assumes 6% growth in telephones. The growth in lines in service has been calculated assuming the same rate (i.e. assuming a constant ratio of telephones to lines in service), which implies only 62% fill of new exchange capacity. The estimate is thus very conservative.

/f No figure given in modified project. This very conservative estimate is derived from the proposed net increase in exchange capacity by assuming an incremental exchange fill similar to the one implied in the original targets (62%).

/g Number of circuits expected at end of 1972 (675-EA AR, Annex 15) less actuals at end 1965.

/h Actual circuits at end 1972 plus 5/6 of expected 1973-75 growth (914-EA) less actuals end 1965. This does not include parts of 1971-72 program completed after 1972, so figure given is an underestimate.

revenues (local + long distance) was initially forecasted.^{1/} Although this has been roughly the growth of the number of local calls in 1966-74, long distance calls have increased at 19% p.a., partly the outcome of introducing subscriber trunk dialing. EAPTC considers they also underestimated average call duration. The outcome is an average traffic intensity per subscriber line well in excess of EAPTC's equipment design targets, resulting in substantial underprovision of traffic capacity in new exchanges and in the expansion of old ones; in the long distance system, this problem has been compounded by construction of switching centers lagging behind the provision of high capacity transmission routes (e.g. microwaves). The outcome of these underprovisions for traffic is heavy congestion. An example of telephone congestion can be taken from measurements in Nairobi's calls during May 1974. Of all local call attempts, only 29% resulted in effective calls; 26% of attempts were not completed for lack of exchange traffic capacity (2% no tone, 22% switching organs engaged, 2% miscellaneous insufficiencies or faults), 30% due to the other telephone being engaged, 6% by no reply and 9% by other reasons. Note that 30% of "other telephone engaged" is very high and probably reflects both the need to perform many repeated attempts to get a call through (thus congestion feeds back on itself, increasing it further) and the severe shortage of telephone lines (when many callers use a single telephone, a situation common in East African businesses). Of all attempts to call STD, 10% are effectively completed calls; 58% are lost for lack of traffic capacity (2% lost for lack of tone, 54% for lack of switching organs available, 2% miscellaneous shortages and faults), 24% for other telephone engaged, 1% no reply, and 8% other reasons. This very poor rate of success of STD calls leads to repeated attempts which are believed by EAPTC to be sufficiently numerous as to contribute significantly to overloading further the local exchanges as well. The situation of Nairobi is believed by EAPTC to be roughly typical of the East African system as a whole.^{2/}

22. Such heavy congestion brings faster wear and tear of equipment (i.e., greater maintenance costs and reduced useful life), some duplication of construction costs, and probably large losses of revenue due to inability to carry all traffic offered.^{3/} Thus, underestimation of traffic compounded by slow connections growth and premature introduction of STD has resulted in a dramatic reduction of quality of service to users,^{4/} which comes in addition

1/ Traffic revenues are determined in a complex way by traffic composition (e.g., local vs long distance), frequency and duration of calls, and tariffs. Switching equipment design, in contrast, is defined by traffic intensity which is related to number and duration of calls. Forecasting traffic revenues (useful for financial analysis) is thus not adequate as a base for discussing evolution of the system's traffic handling capacity, but the first project's appraisal report gives no better reference; as the analysis' conclusions are strong, they are unlikely to change qualitatively if this source of error is removed.

2/ About 25% of all Nairobi calls became effective. The figure in Kampala is 19% and in Arusha is 30%, also very low indeed.

3/ EAPTC have calculated tentatively that in a single Nairobi C-400 exchange, loss of revenue on long distance traffic due to insufficient traffic-handling capacity is over US\$200,000 per year, although the exchange is at present serving only half the 5,000 subscriber lines it is designed to take. Thus one year's lost revenues would probably more than pay for the additional components needed to carry the lost traffic.

4/ Preparation of a national plan to add equipment to relieve congestion calls for complex analysis and system measurements which EAPTC are not at present in a position to undertake alone. Being aware of this, they have initiated contacts for suitable technical assistance.

to the increasing inability to supply new connections at the rate they are demanded. Not unjustifiedly, therefore, EAPTC believes their credibility among businessmen^{1/} is being lost.

23. Within the scope of this performance audit it is not possible to determine to what extent forecasting errors could have been avoided at the times they were made, nor whether the Bank could have identified these errors and oriented EAPTC towards more reliable forecasting.^{2/}

Impact and Price of Services

24. No explicit economic assessment of the first project has been done by the Bank except for brief and general statements. For the second project, 19% incremental financial rate of return was forecasted at appraisal. A promising (but necessarily very limited) attempt was made at appraisal to calculate consumers' surplus benefits.

25. Bank economic studies in East Africa emphasize the need to channel vigorously benefits of growth in the modern sectors to the traditional sectors of the economy. For EAPTC this mainly means orienting a substantial share of their effort towards the rural areas, where by far most of the population lives and will continue to live for the foreseeable future. Rural telecommunications could be expected thus to have emerged visibly both as EAPTC projects and as explicit components of the partner states' programs for rural development, but this did not happen. EAPTC, at the outset, concentrated available resources in trying to meet urban demand following a classical pattern. More recently EAPTC has increased its rural efforts and about 29% of the lines to be added under the third project are rural.

26. Nonetheless, several facts indicate some real (if not explicit) concern for developing rural services under the first two loans. In 1966-74 EAPTC maintained approximately a 20% of manual telephone exchange capacity; as new manual exchanges are used in East Africa only to expand service in rural areas, and a number of older manual exchanges have been replaced by automatic, a constant 20% manual lines implies the rate of increase in rural capacity is likely to have been somewhat higher than that of urban plant. No studies are available to suggest what is the optimal use of rural and urban investments in East Africa; had it been studied and found desirable, even more could have been done for the rural areas, especially if an explicit policy of urban to rural internal subsidy had been adopted by EAPTC and tariff structure rearranged accordingly.^{3/}

^{1/} Probably more than 80% of telephone subscribers in East Africa are businesses and Government offices.

^{2/} In any case, the size of project that could have been undertaken was limited by institutional and financial constraints, but more accurate targets would have improved design.

^{3/} With connections demand running well ahead of EAPTC's limited supply capabilities, probably there would have been considerable further margin to do this (e.g., by charging urban subscribers higher connection fees and rentals or requiring from them a substantial capital contribution).

27. Another significant contribution of EAPTC to rural services was "radiocall", an HF radio network providing limited two-way voice communication to remote or isolated spots. This system continued to grow;^{1/} although it is grossly overloaded, it is still the only means for emergency communication in most of the rural areas (and most of them do not even have this much and the nearest place to call from isolated areas may be 300 km or more away) and even along such major roads as Mombasa-Nairobi. As EAPTC developed the modern long distance networks interconnecting large towns and cities, they have traversed some large rural areas; this allowed them to initiate a practice of dropping channels at intermediate points at relatively low marginal costs, to replace radiocall stations with modern telephone service, which is a right step towards a permanent solution in these zones.

28. An important example of achievement is the way the poor and sparsely inhabited Tanzanian interior was crisscrossed by microwave and other links set up to interconnect towns and cities in the better-off periphery among themselves; these routes opened up the possibility of serving a substantial proportion of the rural interior, also at a small marginal cost. The fact that Dodoma has recently been selected as Tanzania's new capital (to become effective in 10 years), and that already now various Government functions are being moved into it, is to some extent made possible by this convergence of telecommunication routes.

29. EAPTC's services are expensive. The high unit costs of expansion and improvement of the telecommunications system under the second project, as well as increasing operating costs of existing plant, have resulted in the need to increase telecommunications tariffs substantially: two successive revisions during the second project have brought unit telephone call charges up by 117%, telephone connection charges by 50%, and telephone rentals by 100%. With the 63% increase in call charges (the main revenue-earning tariff component) effective in 1975 (to US\$9 equivalent), East Africa's telephone services may well be now among the most expensive in its continent.^{2/}

30. EAPTC's tariffs were reviewed by the Bank on the pragmatic grounds that are usual practice in other countries, and found to be acceptable within that framework. Although EAPTC had an experienced traffic and tariff officer for several years, and at Bank instigation a traffic expert was provided for the training school beyond initial provisions, EAPTC lacked suitable staff in going alone into tariff studies of substantial scope. Limited tariff studies were conducted by both EAPTC and an ITU team, but the broad economic issues in

^{1/} But not out of Bank loans.

^{2/} Overpriced urban labor means local costs are inflated, but underpriced capital and foreign exchange influence costs in the opposite direction. The resultant is not known, but if it is close to the figure calculated at market prices, then tariffs expressed in US\$ would be affected only by the underpricing of foreign exchange. If the foreign exchange price is 20% low, unit call charges would be around US\$7 which is still high but probably not a continental record.

alternative pricing schemes were not addressed at any time. The Bank, although in recent years it has done some preliminary work on telecommunications pricing, did not specifically take up East Africa's case. Thus EAPTC's tariff changes (1969, 1972, 1975) have been only changes in level addressed to maintain an adequate financial position and finance a significant proportion of the development program. No structural tariff changes have taken place which might tend to align prices with costs (the cost structure is unknown) and to implement a specific philosophy of telecommunications services development.

31. The use of tariffs to handle specific problems was also not explored. A case where this could have been important is related to the possibility of drawing on runaway urban connections demand to raise more own capital for future expansions and to shift more resources into rural services. Another case is congestion, where it has not been analyzed whether changes in the charging plan (e.g., aimed at spreading traffic more evenly across the day, or at reducing the average calling rate) could have somehow alleviated the situation while capacity gradually expanded to meet demand.^{1/}

Institutional Problems

32. The ultimate limitations to telecommunications expansion and improvement over the two projects have been EAPTC's planning, design, installation and managerial capacity.

33. Staffing problems have troubled EAPTC throughout the projects and have affected significantly both the specific projects themselves and consolidation of EAPTC as a modern organization. To a considerable degree this was due to their heavy initial dependence on European expatriates at senior engineering and management levels, and on Asians at intermediate levels. Lack of experienced African staff tended to be perpetuated by the inherited character of the organization which centered in the foreigners rather than aiming at incorporating and promoting vigorously young Africans towards all senior posts. Although Bank missions recognized the importance of "Africanization" and its role in giving EAPTC ultimate stability, the Bank's initial position shown in the first loan documents is one centering EAPTC in expatriates rather than in Africans. The second loan documents required that EAPTC employ sufficient qualified staff to maintain good service and financial performance, using expatriates as necessary, and that Africans replace them only as they became competent. There was no requirement in either loan's documents directing EAPTC towards suitable measures to ensure this growing African competence and thus accelerate transfer of all posts into African hands. The Bank has, however, taken a growing interest in the training and advancement of African staff.

34. Heavy reliance on non-Africans was a determining factor in two major crises. The first one occurred in 1970, when EAPTC's headquarters were moved from Nairobi to Kampala following East African Community agreements on location of common services. The move to Kampala resulted in the senior engineering

^{1/} Traffic per line is, in some areas, well above the normal design limits of exchanges. Even if the latter had been bought from the start with a more generous traffic handling capacity, EAPTC believes congestion would still be there although to a lesser degree, so further action was anyway likely to have been desirable to bring user habits into line with normal equipment.

personnel at headquarters being reduced from 19 to 7 with an almost complete halt in development planning, preparation of bid specifications, and other functions. The main factors behind this loss of staff were, in the view of those involved, the reduced amenities in Kampala (e.g. educational facilities), possibility for officers to retire on pension and be employed by other organizations (but not by EAPTC elsewhere) and increased cost of living in Kampala. Various measures gradually got EAPTC over this crisis: increases in salaries, re-hiring retired staff on a contract basis, and above all a further supply of experts through Swedish and Canadian aid.

35. The other major staff crisis occurred in 1972 when substantial numbers of staff (including aid financed expatriates and some Africans) left Uganda.

36. EAPTC's training efforts have been adequate at technician level and below; their central training school has been much improved and now is supported by ITU expertise and financed by UNDP; it provides training to a total of eight African countries. But a program directed at the senior posts was lacking. This was made worse by the gradual loss of almost all Asians (see Table 6), leaving EAPTC without a settled middle-level core out of which candidates for senior posts could have been selected. As the lead times and risks involved in such a program are substantially higher, very early action should have been taken (e.g., combining selection, higher education, on-the-job training and fairly fast promotion). It was not until 1970 that EAPTC's Board gave strong impetus to transfer all posts to African hands by 1976-78. The Bank, which had been actively concerned with other training from the start, did not initially pursue the issue of Africanization of the senior posts; further, it took some 2-1/2 years to realize the meaning of the first alarm signs received in writing on what would end up in the 1970 crisis.^{1/}

37. In the later years the Bank has stressed the need to accelerate the appointment of Africans to senior posts even if they were somewhat inexperienced for normal promotion, provided they have a suitable educational background and a strong commitment to start with; this is wholly correct, and experience with the recent new appointees has been very satisfactory.

^{1/} The first written warning by the EAPTC's Engineer in Chief (an expatriate) about serious staffing problems was received by the Bank from EAPTC in November 1967. In August 1968 EAPTC stated that shortage of personnel was delaying planning and preparation of bid specifications. In September 1969 the Bank was warned again that serious dislocations were likely to accompany the impending move to Kampala; this, however, was discounted in discussions at the time by EAPTC's Chairman and his Assistant Director General for Personnel. Nonetheless, major losses did take place and by January 1970 specifications for some equipment had to be re-drafted in order to transfer to the suppliers various responsibilities and complementary construction formerly meant to be undertaken by EAPTC. Throughout this period, Bank believed the announced crisis was a self-fulfilling prophecy resulting from the fact that some expatriates were unwilling to recognize and support the political need of moving EAPTC Headquarters to Kampala. The dimension of the 1970 crisis suggests Bank and the EAPTC authorities consulted had chosen the wrong interpretations. At that stage, Bank took an active concern for the crisis and effectively helped to obtain Swedish and Canadian aid assisting to overcome it.

38. Overall progress in Africanization has been substantial, but one-half the executive engineers and higher positions are either vacant or occupied by non-Africans; this is especially acute in central telecommunications headquarters, where the proportion of vacant and non-Africans is 81%:

Table 6: PROPORTION OF AUTHORIZED GRADED POSTS OCCUPIED BY NATIONALITIES (IN %)

	1965		1974	
	All EAPTC ^{a/}	All EAPTC ^{a/}	Telecommunications Dept., Executive Engineers and Higher ^{b/} Central HQ + Region	Central HQ only
	%	%	%	%
Africans	79	95	50	19
Asians	16	1)	19	14
Europeans and Others	5	4)		
Vacant	-	-	31	67
	100	100	100	100

a/ Refers to occupied positions only.

b/ Trainees and Pupil Engineers not counted as they are not included in numbers of authorized posts.

39. The EAPTC's recent action on recruitment, promotion, higher education and technical training is likely to complete by 1978 the transfer of most telecommunication functions to qualified Africans, already identified and being prepared for these promotions. There are, however, a number of important positions (especially related to long-term planning) for which there are no suitable staff available in the short-term and which are unlikely to be well consolidated before 1980.

40. The second loan agreement included a covenant limiting telephone and telex staff increases to 5 percentage points below increase in telephones. Under the appraised assumption of wages and salaries not increasing more than 3% p.a., this was expected to keep growth of the wage and salary bill 2 percentage points below telephone growth. Actually staff increase remained below the given limit; however, similar results were obtained prior to the covenant. Besides, wages and salaries increased well over the expected rate, so the wage and salary bill target was nowhere near being met and the ultimate purpose of

the covenant has not been achieved.^{1/}

41. The following table shows EAPTC staffing in 1965-1973:

Table 7: GROWTH OF EAPTC STAFF 1965-73

	December 31						Growth % p.a.		
	1965	1969	1970	1971	1972	1973	1965-1973	1969-1971	1972-1973
Estimated graded telecom. staff ^{/a}	2,360	3,160	3,280	3,370	3,260 ^{/b}	3,320	5	3	2
Total EAPTC graded staff ^{/c}	4,810	5,480	6,440	6,470	6,350	6,720	4	9	6
Total EAPTC staff ^{/d}	7,563	9,780	9,780	9,960	10,690	11,270	5	2	5
Staff/telephone ratio ^{/d}	25	24	23	21	19	17			

^{/a} Estimates follow supervision mission practices and figures: in 1965-1971 graded telecommunications staff are estimated as all EAPTC graded engineering staff plus graded telecommunications staff, while from 1972 the figure equals the number of staff in the Telecommunications Department (formed in the 1971 re-organization).

^{/b} Change from 1971 to 1972 is subject to large error due to change of estimation criterion (see note ^{/a}).

^{/c} Global EAPTC figures (from mission reports, generally consistent among themselves but not with 675-EA appraisal report) not consistent with figures in EAPTC's Annual Reports and Accounts which are approximately one year higher.

^{/d} Estimated graded telecommunications staff per 1,000 telephones (all stations).

42. While it is not possible with available information to verify in detail the fulfillment of the covenant, telecommunications graded staff have apparently grown at or less than 3% p.a. cumulative in 1970/1973, while telephones (all stations) increased at 10% p.a. over the same period, which satisfies the covenant. Over 1966-1973, telecommunications graded staff

^{1/} Accounts for 1973 and 1974 are not yet available to carry the analysis to the second project's completion date. The conclusion is valid as of the end of 1972.

growth has been 4 to 5% p.a. cumulative, while telephones have increased at somewhat over 9% p.a.; this is also roughly in line with the covenant although it was not in force during the first project. Telecommunications graded staff per 1,000 telephones changed from 25 in 1965 to 17 in 1973; these figures cannot be compared directly with those of other countries as semi-skilled workmen are not included here, but represent a significant improvement of labor productivity within EAPTC.

43. Average wages and salaries at current prices have increased in 1970-72 well above the 3% expected: 9.4% in 1970, 6.0% in 1971 and 35.7% in 1972.^{1/} Thus growth of the wage and salary bill during the second project was the expected 2 percentage points below telephone growth only in 1971, while 1970 and especially 1972 wage bill growth, even after adjustment for inflation, exceeded telephone growth although staff increases remained within expected limits. Wages and salaries per telephone at current prices were at the end of 1972 13% higher than in 1965 in spite of a 9% reduction between 1965 and 1969; in real terms, the 1972 level is still 3% below 1965 but is 10% above 1970. The table below shows these various changes:

Table 8: EVOLUTION OF WAGES AND SALARIES

Year	Wages & Salaries Bill/Telephones		Wages & Salaries Bill Increase		
	Current Prices	Real Terms ^{/a}	Current Prices	Real Terms ^{/a}	Telephone Increase
1965	EA Sh 349	EA Sh 349			
1966	343	342	6.2%	6.0	8.1%
1967	325	319	2.0	0.6	7.7
1968	320	311	6.4	5.1	8.0
1969	318	306	9.1	7.8	9.5
1970	331	308	13.6	10.2	9.2
1971	325	295	8.9	6.3	10.9
1972	394	338	31.3	23.8	12.6
1973					
1974					

^{/a} Kenya's general price index based on 1965 used for whole bill.

44. In the course of the projects, EAPTC's organization has been changed substantially in order to improve telecommunication operations. A supplementary letter to the first loan agreement required EAPTC to improve coordination between the telecommunication engineering and operations functions, at that time carried out by separate units. As this was not sufficiently successful,

^{1/} Figures calculated as total telecommunications wages and salaries bill divided by number of telecommunications graded staff.

a covenant under the second loan required EAPTC to merge (by June 1971) all telecommunication functions into a single Telecommunications Department under an Assistant Director General (Telecommunications). An ITU team prepared and recommended an organization scheme which was found by Bank to run contrary to the merger covenant and to require use of additional qualified staff which was considered undesirable at that stage of EAPTC's development. The new organization (see Annex 4) was designed with substantial Bank assistance and established in July 1971 (almost on schedule). Implementation, though, has made slower progress, and at the end of 1974 there were still a number of critically important posts vacant or manned only temporarily. The least consolidated parts are the long range studies and coordination (LRSC) groups and the growth estimates and design (GED) groups, both at central and regional headquarters. This showed up in EAPTC's very limited capacity for medium- and long-term planning (of both services and engineering) and its persistently weak ties with the partner states' development targets at national, provincial and local levels.

45. The organizational changes rightly required by the Bank were aimed at good coordination among all telecommunication functions. This has been achieved, within the limitations imposed by the understaffed (or unstaffed) LRSC and GED activities but other organizational problems have arisen out of EAPTC's rapid and substantial growth over the last decade: at the second project's end, management of stores urgently needed to be modernized; finances and accounting were not responsive to modern management requirements; maintenance procedures and overall organization needed substantial improvement. EAPTC took initiatives aimed at dealing with these growth problems through aid programs, and the Bank actively assisted in securing Canadian aid to undertake the reorganization of finances and accounting. At the end of the second project none of these exercises were yet under way but they appeared to be forthcoming reasonably soon. It is a matter of judgment to decide whether the Bank should have identified these rising difficulties as a product of EAPTC's expected growth under the projects, and thus have given even greater emphasis to organizational matters in the second loan agreement. It is also likely that attempting to tackle simultaneously both the basic structural matters and these more specific problems would have been beyond what EAPTC could have borne.

46. In addition to the substantive organizational matters, several contingent management difficulties arose during the project, partly as problems of building up the Community and partly as outcome of the staffing crises. The first one emerged in 1968, when the EAPTC was just formed and the East African Community was still finding its own basic operating ways. Conflicts arose between the Communications Council and EAPTC's Board of Directors, and between the latter and the EAPTC's Director General. Basically these were conflicts brought about by insufficiently clear separation of functions, and as the outcome of strains among the Communications Council members from the three countries (reflecting in turn the situation among their respective Governments). These difficulties resulted in undue delays in the approval of EAPTC's development and financing programs and of a tariff change; also management effectiveness in EAPTC suffered considerably for a time. In 1970 EAPTC ran into fresh management problems when the Engineer in Chief resigned and left in October (in connection with the first move to Kampala) and

a successor was not appointed; nine months later, once the new organization became effective, his functions were taken over by the Assistant Director General (Telecommunications). Significant disruption of planning and coordination were experienced during that interval, but the situation came under control towards the end of 1971.

47. Central accounting functions are split between Kampala and Nairobi. Due to this, 1972 accounts were received only in September 1974, and the 1973 accounts will become available only sometime in 1975.^{1/} EAPTC is confident that the 1974 accounts will be ready by the end of 1975.

48. After troubles encountered in transferring funds among the three countries (which in 1974 led to a temporary inability to meet Bank payments in time), EAPTC was considering requiring each region to meet its own operating expenses from revenues generated in that region and to share headquarters costs; capital expenditures related to international transactions (e.g., repayment of Bank loans) would be shared on the basis of each region's use of the proceeds of these transactions.

Financial Performance

49. EAPTC's financial performance has been generally satisfactory throughout both projects. A summary of indicators is given below.

Table 9: FINANCIAL PERFORMANCE

		<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
<u>Telecommunications Only</u> ^{/a}											
	Actual	12.0	12.6	11.6	13.6	15.3	18.8	23.8	22.1	13.5	26.0 ^{/b}
Rate of return	Forecast	10.6	10.0	9.7	9.9	10.3	12.8	13.1	20.6	17.9	16.0
	Actual	79	77	78	75	74	71	69	70	80	74
Operating Ratio	Forecast	81	80	79	79	78	73	73	70	71	72
<u>All Operations</u> ^{/a}											
	Actual	13.7	13.2	12.8	14.1	14.6	15.5	22.0	16.6	8.5	21.0 ^{/b}
Rate of Return	Forecast	12.2	11.6	11.1	11.0	11.3	13.9	14.6	19.6	16.7	14.8
	Actual				2.3	2.1	2.7	3.1	3.0	1.7	4.3
Debt service coverage ^{/c}	Forecast	1.9	1.6	1.8	1.7	2.6	2.4	2.1	3.5	2.4	3.1
	Actual		61/39	64/36	60/40	53/47	48/52	34/66	31/69	31/69	
Debt/equity	Forecast		66/34	63/37	58/42	53/47	53/47	49/51	40/60	39/61	41/54

^{/a} Appraised estimates: 1966-70 drawn from 483-EA appraisal report, 1971-72 from 675-EA and 1973-76 from 914-EA. Actuals are audited up to 1972, EAPTC's provisional data for 1973, EAPTC's estimates for 1974 and EAPTC's forecasts for 1975 (including 1975 tariff increase and wages and salaries adjustments as approved before February 1975.

^{/b} Estimated assuming 16% growth of net plants in 1975.

^{/c} Total cash generation/debt interest and amortization.

^{1/} Loan covenants require audited accounts to be submitted not later than six months after the year's end.

50. The rate of return on average net fixed assets in operation (postal and telecommunications) has been well over the 10% required under Loan 483-EA, except for 1974 where it dropped to 8.5% as a result of rapidly increasing local costs. The rate of return for telecommunications operations alone has been well above the 10% required under Loan 675-EA, including 1974 (when it hit a six-year low of 13.5%). For each year in 1966-1974 telecommunications rate of return has been above the corresponding appraised estimates. Nonetheless, in 1974 the outlook for 1975 and 1976 was very unsatisfactory, with negative net operating incomes in both the telecommunications and postal sectors. A telecommunications and postal tariff increase approved in late 1974 and effective from February 1975, is expected to raise 1975 telecommunications revenues by 46% and postal revenues by 51%, which is likely to yield very satisfactory financial indicators, including rates of return above 20%

51. Stock maturing in 1970 and 1974 has been paid in full (except for a small number of unidentified holders who have not come forward to be paid). Towards the end of 1970, the Crown Agents concluded that the sinking fund for stock maturing in 1977 and 1983 would be overprovided if the schedule of contribution agreed under the loans continued to be followed;^{1/} the Bank agreed that EAPTC reduce the contributions accordingly.

52. Accounts receivable (mainly unpaid telephone and telex bills) have been high throughout both projects. In December 1973 they amounted to about US\$14 million equivalent, which equals 3.3 months of EAPTC's total telecommunications revenues in that year. Unpaid telephone bills accounted for 86% of the total or 2.9 months total telecommunications revenues (telex 10%, telegraph 4%). In 1966-74 receivables varied between 2-1/2 and 4-1/2 months' revenues. According to EAPTC, approximately two months is the least that can be achieved for private subscribers. Collection of payments from Government subscribers is slower, must proceed through the respective Ministries, and cannot involve suspending service; Government subscribers account for a substantial part of telecommunications revenues. Thus EAPTC consider three months' revenue is about the best they could do without attempting procedural changes outside its province. Bank's insistence on reducing to two months may have been asking too much.

53. The second loan agreement required EAPTC to undertake and complete, by the end of 1973, an actuarial revision of their Pension Fund. The study (undertaken by a British firm) was completed and delivered to EAPTC on January 31, 1975, or two years behind schedule. The delay was partly caused by EAPTC's slow action in starting the study and partly by delays in the study itself. Its contents are not yet available to the Bank, but EAPTC staff advanced that it considered the Pension Fund to be over-provided, thus possibly opening the way for EAPTC to reduce its future payments to it and write off part of the debt and interest it has incurred towards the Fund when retaining payments due to it on several past occasions.

^{1/} Interest rates on the fund have been greater than expected at the time the fund contributions schedule was set up.

54. EAPTC's self-financing of fixed investment has been high throughout the period though it fell slightly short of expectations for 1966-70 (Loan 483-EA), and was substantially ahead of them in 1970-72 (Loan 675-EA). Borrowings in the first period were somewhat over the appraised financial plan estimates, mainly by retaining payments to (or borrowing from) the Pension Fund to overcome larger than forecasted construction requirements. In 1970-72 borrowings were far below forecasts, mainly because of the very slow disbursement of Loan 675-EA. Substantial expected reductions of the accounts receivable did not materialize in 1966-70. Accounts receivable further increased in 1970-72 (but have remained at approximately 37% of telecommunications revenues in 1966-72).^{1/}

Procurement Issues

55. Bank rules and loan covenants on procurement have generally been adhered to. One important exception arose when EAPTC issued invitations to bid for approximately one-half the first project's telephone switching equipment, in terms which had only partly taken into account specific changes required by the Bank. When EAPTC was informed that the purchase would not be eligible for Bank financing, it recalled the tender and issued new specifications.

56. Competitive international tenders have become, under the Bank loans, a normal way of procurement with considerable benefits to EAPTC.

57. International tenders meant departing from exclusively British-oriented purchases; this has required EAPTC's technical staff to broaden their understanding and cover a wide range of products and techniques rather than be limited to those of a very few, fixed suppliers from a single country. EAPTC believes that the fact that Bank financing is secure results in lower bid prices; they feel suppliers would build in a larger risk allowance if the buyer were offering to pay the goods out of his own internal resources. Higher prices are also charged if the supplier must assist EAPTC in finding financing. EAPTC believes too that suppliers are more careful in preparing their technical and price bids when they know these will be scrutinized by the Bank.

58. International tenders brought large initial savings as compared to prices under the previous practice of bulk negotiation with a fixed, small group of suppliers. The savings are also illustrated by a negotiated purchase of telephone apparatus from a local manufacturer, which resulted in a unit price approximately 30% above a contemporary international tender award.

59. Nevertheless, such savings did not always occur. EAPTC wanted to buy teleprinters at a newly negotiated price from a manufacturer who had earlier supplied a somewhat smaller amount of the same kind of machine through competitive tenders. While prepared to allow EAPTC to purchase its immediate requirements of teleprinters under the original contract, the Bank insisted, in view of the quantities involved, on retendering for the balance. EAPTC chose to go to tenders for the whole new purchase, which then showed the same supplier

^{1/} Further details of financing plans and actuals are given in Annex 9.

to be the lowest bidder at a price close to that negotiated, so in this case full competition did not bring any appreciable advantage to EAPTC.

60. Another difficulty related to the purchase of extensions to existing equipment (especially filling in telephone exchanges with additional switches to take them to their final designed capacity) by direct negotiation with the initial supplier, provided he had been initially selected by international competitive tenders and provided prices were shown to be reasonably in line with contemporary international market prices. Although the Bank has now an established position which accepts such operations, this still appears to EAPTC as exception rather than norm. Apparently, frequent Bank efforts to convey the present position to EAPTC have not sufficed.

61. Problems have also arisen in connection with bid evaluation criteria, where EAPTC feel that satisfactory procedures have so far not been worked out with the Bank to take into account non-price factors derived from introducing new types of equipment (e.g., a different make of teleprinter or telephone switch).

62. The Bank's procurement procedures also make no allowance for risk. Except for prequalification, EAPTC has not been permitted to reflect in the bid analyses the fact that some bidders arouse doubts as to their ability to fulfill their contracts, either because they are newly established or because EAPTC and its agents have had no experience with them. Although EAPTC believe this can be overcome by closer inspection during manufacture, Bank did not allow these higher costs to be considered in bid evaluations. Unsettled conditions in a manufacturer's country or region is another source of risk which EAPTC have faced and which bid evaluations may not take explicitly into account so far. Thus, EAPTC feel they have to some extent been forced to become the guinea-pigs of new manufacturers and to run risks which would be considered quite unwise in other circumstances.

63. The major procurement disagreement between Bank and the EAPTC has been on achieving standardization of telephone switching equipment while complying with the requirement of competitive bidding. A degree of standardization is needed to ensure interconnection compatibility of different exchanges and low training, stores and maintenance costs.

64. Interworking may be ensured by settling on a single manufacturer, but this is likely to yield high prices and is also unacceptable within the Bank's procurement guidelines. Interworking can also be secured by establishing at the outset and within an internationally agreed set of standards, firm long-term system engineering plans including definition of subscribers' and charging facilities to be implemented, a comprehensive signalling plan (which is the interworking language), and choice of a type of switch (e.g., step-by-step, crossbar). Within this latter context individual exchanges can be treated independently of who manufactures them, and competitive procurement is technically possible; besides, if the choice of switch has been based on sound technical-economic analysis and if bid analysis procedures are worked out in advance to include reasonable allowances for the main costs of innovation (e.g., retraining), competitive procurement is not only technically acceptable but also likely to lead to least cost decisions.

65. When the first loan was being discussed, EAPTC had essentially two types of switching equipment in use: Strowger (step-by-step) in the larger exchanges and a uniselector type small exchanges, both manufactured to British Post Office standards and purchased on a negotiated basis from three British suppliers. EAPTC decided to continue to buy step equipment only. Long-term definitions on subscribers' and charging facilities were not yet in hand nor had a signalling plan been devised.

66. While the first loan was being processed, EAPTC ordered a Plessey (U.K.) uniselector trunk switching system (first sold to East Africa and then discontinued) with non-standard signalling and (in spite of the earlier decision to continue only with step) a Northern Electric (Canada) crossbar exchange. Although these purchases did not follow from technical consultation with the Bank, and the purchase of the Plessey system was an engineering error, the Bank later agreed to finance both purchases retroactively.

67. After successive contradictions on their own choice of switch type, by late 1967 EAPTC decided finally for new exchanges to move the whole network into crossbar while continuing to expand existing step exchanges. Basic engineering plans were still not completed, and CCITT standards for crossbar were not well established. Besides, EAPTC had no experience in specifying crossbar, all of which led to lengthy disagreements with the Bank and substantial delays.

68. Although at the Bank's suggestion EAPTC undertook to reduce the range of new equipment by going to tenders for the full next five years' needs, in practice it purchased a further three Northern Electric crossbar exchanges, a large L.M. Ericsson (Sweden) crossbar exchange, and Hitachi (Japan) crossbar exchanges. Further, EAPTC decided on ITT Pentaconta for its telex exchange (even if its price advantage over L.M. Ericsson was negligible and Bank was willing to accept the latter to avoid further proliferation). In the last several years, Hitachi has repeatedly been awarded the new contracts, being the lowest bidder.

69. By now EAPTC has adopted an internationally accepted signalling system (partly the outcome of Bank insistence) and decided to phase others gradually out. As a result of the choice of switch and signalling system having been made at a rather late stage, significant expenses were incurred in interworking equipment and at least some equipment cannot be fully integrated at reasonable costs and thus will be a limiting factor until their capital life is expended (which normally would be some 15 to 20 years from now).

70. For a long time EAPTC blamed the Bank's competitive bidding requirements for the proliferation of equipment types and associated problems, but that is not fair. In the last count, the problems have been of EAPTC's own making: lack of sound system planning, vacillating and insufficiently objective decisions on switch type, and unwillingness to adopt Bank's advice on increasing the scope of tenders, were the main factors. Nonetheless, Bank could have helped EAPTC more in some matters.

71. At the first project's appraisal the Bank supported EAPTC's decision to continue to buy only step equipment, on grounds of maintenance simplicity and low training costs for expansion. This was probably already then an exceedingly conservative position, unsupported by contemporary trends in prices, delivery times, maintenance costs and other relevant factors. When EAPTC finally made up its mind favoring crossbar, this was accepted by Bank, although for some time it blamed delays and other troubles on EAPTC's decision to adopt crossbar. Thus, the Bank did not recognize initially that technically and economically the change of technology was justified: it first supported an obsolescent technique, and then gradually accepted a new one, in both cases apparently without sufficiently complete analysis of the costs and other factors involved and also without requiring EAPTC to base their own decision on careful technical-economic studies.

72. The Bank's impact on the implementation of system planning and on bringing EAPTC to take firm decisions and proceed efficiently on procurements, was weakest at the initial stage (when undue equipment proliferation began). At that time the Bank itself was not well established in its telecommunications operations; for instance, Bank's effort on reviewing specifications, and on interpreting procurement guidelines in terms specifically applicable to telecommunications projects, only became systematic after the first loan became effective. It is likely that before that, more Bank participation would have been very useful. Later, the Bank did become increasingly involved in the project, and in this audit it is not clear whether further pressure could have yielded significantly better and more timely results, as would have been most desirable. This is a particularly relevant question in relation to the fact that EAPTC, by the combination of factors noted, was in a weak condition whereby it became especially vulnerable, within the Bank's requirements for competitive tenders, to the introduction of a variety of equipment types which they later understood to lead to serious limitations.

73. The transition stage, where EAPTC establishes and comes to sustain firmly long-term engineering and service definitions, is not over. Long-range planning and design are weakly settled activities, and EAPTC feel this will still take several years to overcome. Thus EAPTC could stumble again into excessive diversity or incur economically and/or technically unjustified change of basic system technology, should market or financial conditions press them away from the present procurement pattern - which is one where they have de facto standardized on a single supplier (repeatedly the lowest bidder so far).

Conclusion

74. Under the two loans East Africa's telecommunications system expanded and improved significantly but telephone connections demand has been running increasingly ahead of supply, tariffs are among the highest in Africa, and congestion has built up to intolerable levels. EAPTC suffered serious staffing and management difficulties, compounded by struggles among the partner states and sometimes by unsettled conditions. In this light, EAPTC has done a good job in spite of its very important shortfalls. Organizational weaknesses and external problems brought the EAPTC at times almost to a complete halt; that in spite of this the system continued to operate and grow, suggests

great personal dedication of Africans and expatriates both before and after the 1971 reorganization.

75. Overall impact of the Bank has been very significant. Supervision missions, at an average rate of one every ten months, have increasingly assisted EAPTC through discussion of its problems; to a considerable extent, these missions not only supervised the projects but effectively assisted EAPTC in handling them. Bank staff went as far as taking a commendable active personal interest in supporting a number of young Africans in their efforts to qualify professionally. The Bank's way of dealing with projects in a medium-term context required EAPTC to set their own work in a broader scope and with a longer time horizon. Relationships between Bank and EAPTC have mostly been friendly and constructive, although lengthy misunderstandings and disagreements on procurement matters sometimes made things rather difficult and caused substantial delays, led EAPTC to complain in writing several times of what they felt was Bank's exceedingly tight, slow and punctilious handling of the project, and the Bank to state that EAPTC was purposefully trying to by-pass Bank's requirements. As experience accumulated in dealing with each other, and after EAPTC's 1971 reorganization, these problems gradually subsided and EAPTC now sees the Bank as handling their projects efficiently and with adequate overall understanding.

76. The Bank was a significant factor in shaping EAPTC's long and continuing struggle towards gradual consolidation as a modern public utility, but could have done more.

77. Bank initially took EAPTC as an organization essentially centered on foreigners rather than Africans, without sufficient provisions to ensure rapid emergence of competent Africans for all posts. This was especially true at senior levels, for which lack of a specific Africanization program was made worse by the unexpected loss of medium level Asians from whom candidates could have been selected.

78. The Bank showed little concern for the economic aspects of the projects, while dealing knowledgeably with a large number of technical and financial matters. There was no economic justification given for the first project, and only modest though promising attempts in the second project's appraisal. Projects were appraised without sufficient explicit concern for the role of the EAPTC in the partner states' development targets and strategies; key issues recognized by the Bank's economic studies in East Africa, such as the need to channel an increasing proportion of the modern sector's growth into the traditional sector, did not emerge at all in appraisals or later documents. Tariffs were treated by both EAPTC and the Bank solely as the means to raise revenues; neither looked systematically into the broader economic issues, such as relating tariffs to the cost structure and to specific philosophies of services' development in urban and rural areas, nor into possible practical implications of alternative pricing schemes on aligning user habits with normal design ranges, on more efficient use of the limited system growth possibilities, and on capital formation.

79. Periodical progress reporting requirements were initially too complex for EAPTC, who apparently neither expected to have all the information at hand every quarter nor saw why the Bank wished to have it; simplified reporting was agreed upon later on. Bank's requirement under both loans for EAPTC to submit their annual reports and audited accounts six months after the year's end were inconsistent with EAPTC's normal accounting calendar, which includes a fixed time for submission to the East African Community's Legislative Assembly for approval. Although this was pointed out by EAPTC, the same requirement was carried over into the second loan agreement, even if the procedural changes needed to fulfill it are beyond EAPTC's control. EAPTC in fact were unable to meet the six-month requirement and were understandably at least three months late (until later crises made these delays far worse).

80. The handling of procurement matters could have also been improved somewhat. Bid evaluation procedures should have been worked out with EAPTC to include comprehensively and systematically the quantifiable non-price costs of innovation when they are significant. Apart from prequalification, provision should have been established for reflecting in the bid analysis any unusually large risks associated with specific bidders and the need for more frequent or detailed inspection of manufacture. Bank should have established from the start as norm, rather than exception, that negotiated purchase of expansions to existing equipment up to their design limit is right, provided prices are reasonable at the time of the new purchase.

81. On the main conflictive issue of standardization versus competitive procurement, Bank should have looked further into the trends in switching technology costs and other factors and urged EAPTC to do likewise in order to give a sound foundation to their choice of switch and the timing of the eventual change to crossbar; this could have prevented the Bank from taking an initially excessively conservative position and could have helped EAPTC make up its mind properly and sooner. It would also have been desirable for the Bank to give more effort to technical and procurement matters in the early stage of the first project, had it had its own telecommunications organization well established. Finally, EAPTC was and remains weak in its planning ability which, combined with other factors and their way of initially understanding the Bank's requirement for competitive procurement, provided a context within which they became vulnerable to the indiscriminate introduction of an unduly high variety of switching equipment leading to higher interconnection costs and some ultimate incompatibilities; it is not certain how much more the Bank could have helped to prevent this course of action by taking a stronger stand on engineering and procurement issues, given EAPTC's condition.

Summary of Characteristics of Loans

	Loan 483-EA	Loan 675-EA
Amount	US\$13.0 m	US\$10.4 m (supplemented by US\$5.2 m in Swedish Credit)
Date loan agreement	February 17, 1967	May 25, 1970
Date effective	May 12, 1967	November 9, 1970
Closing date	September 1, 1971 (later extended to December 31, 1972 and September 30, 1973)	June 30, 1974 (later extended to June 30, 1975)
Term of loan	24 years, including 4 years of grace	25 years, including 5 years of grace
Interest rate	6% p.a.	7% p.a.
Commitment charge	3/8 of 1% p.a.	3/4 of 1% p.a.
Amortization	September 15, 1971 to September 15, 1991	June 15, 1975 to December 15, 1974

EAST AFRICAN POSTS AND TELECOMMUNICATIONS CORPORATION
SUMMARY OF TELECOMMUNICATIONS SYSTEM GROWTH 1965-1975^{a/}

	<u>1965</u>		<u>1966</u>		<u>1967</u>		<u>1968</u>		<u>1969</u>		<u>1970</u>		<u>1971</u>		<u>1972</u>		<u>1973</u>		<u>1974</u>		<u>mid-1975</u>	
	<u>Nos.</u>	<u>Increase %</u>	<u>Nos.</u>	<u>Increase %^{b/}</u>	<u>Nos.</u>	<u>Increase %</u>	<u>Nos.</u>	<u>Increase %</u>	<u>Nos.</u>	<u>Increase %</u>	<u>Nos.</u>	<u>Increase %</u>	<u>Nos.</u>	<u>Increase %</u>	<u>Nos.</u>	<u>Increase %</u>	<u>Nos.</u>	<u>Increase %</u>	<u>Nos.</u>	<u>Increase %</u>	<u>Nos.</u>	<u>Increase %</u>
<u>TELEPHONE SERVICE</u>																						
a. Total exchange line capacity (thousands)	56.96		60.18	5.7	62.14	3.3	67.76	9.0	76.90	13.5	87.30	13.5	100.4	15.0	108.4	7.9	112.7	4.0	116.4	3.2	137.8*	18.4*
b. Total subscriber lines in service (thous.)	47.91		51.04	6.5	53.39	4.6	58.13	8.9	60.14	3.5	64.52	7.3	71.54	10.9	77.63	8.5	85.29	9.9	91.8	7.7	96.21*	9.6*
c. Exchange fill (b/c) (%)	84.1		84.8		85.9		85.8		78.2		73.9		71.3		71.6		75.7		78.9		75.7*	
d. Total telephones (all stations) (thous.)	95.45		103.2	8.1	111.2	7.7	102.1	8.0	131.3	9.5	143.7	9.2	159.5	10.9	172.7	8.2	194.4	12.6	214.7	10.4	225.1*	9.6*
e. Total exchange capacity automatic (%)	-		-		83		83		81		-		81		83		-		80		-	
f. Waiting list (thousands)	4.30		6.69	55.0	9.40	40.5	11.31	20.3	15.54	37.4	17.55	12.9	20.05	14.2	22.61	12.7	25.65	13.5	36.10	40.7	43.32*	40.0*
g. Public telephones	420		426		484		498		526		551		617		658		722		765		803	
h. LD channels	1,145		1,194		1,378		1,567		1,761		1,803		1,993		2,117		2,236		2,438		2,587*	
<u>OTHER SERVICES</u>																						
i. Telex lines in service	105		175	66.7	218	24.6	295	35.3	326	10.5	340	4.3	374	10.0	514	37.4	743	44.6	900	21.1	990*	20.0*
i. Radiocall subscribers	397		457	15.1	521	14.0	591	13.4	542	- 83	536	-1.1	569	6.2	765	34.4	886	15.8	940	6.1	987*	5.0*

a/ Totals for 1965-1974 refer to December 31. Totals for 1975 are mid-year forecasts. All growth rates (% column) are annual.
b/ Over preceding year.
* Estimated or forecasted.

EAST AFRICAN POSTS AND TELECOMMUNICATIONS CORPORATION
SUMMARY OF TELECOMMUNICATIONS TRAFFIC GROWTH 1965-1975^{a/}

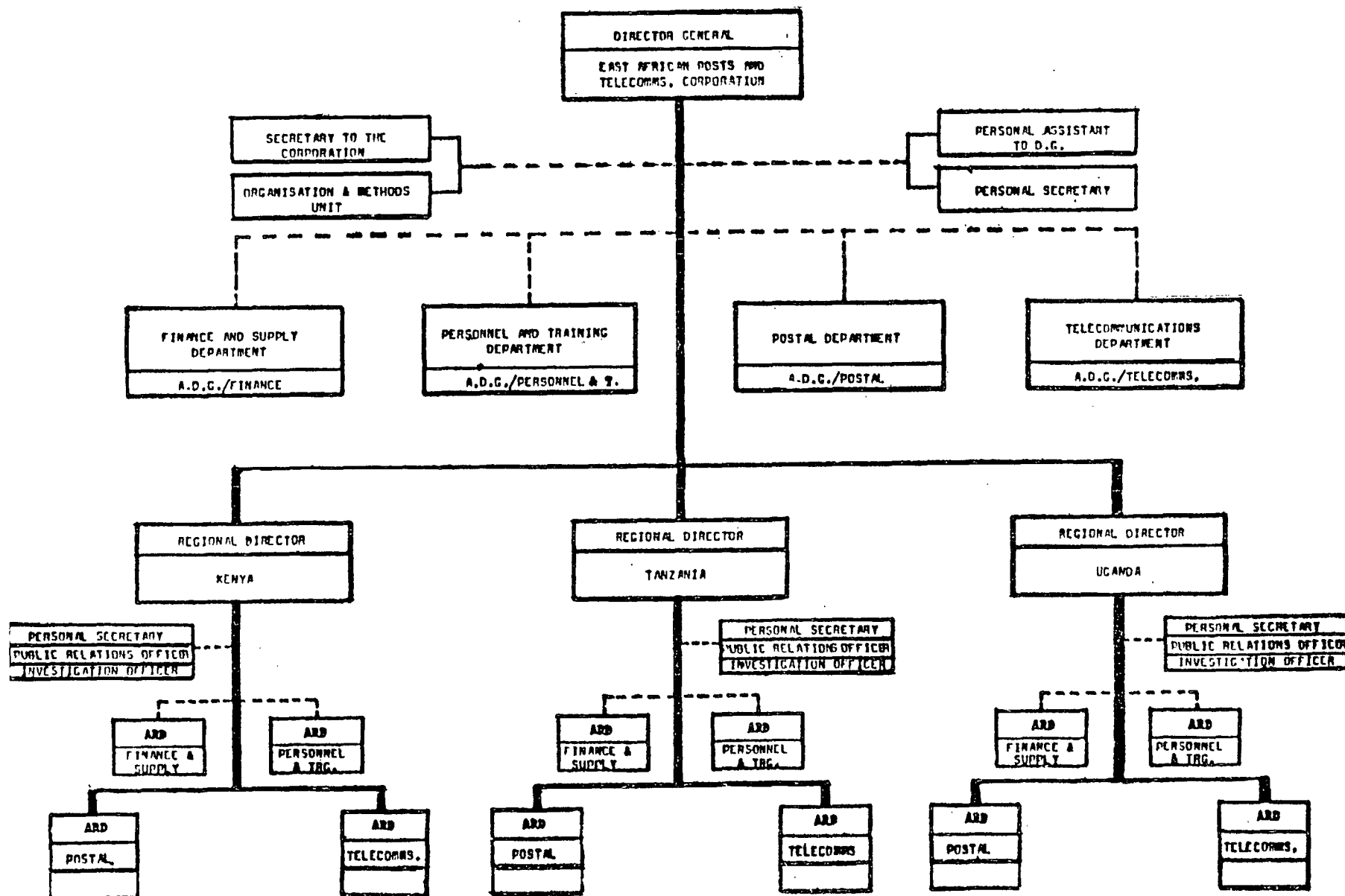
	1965		1966		1967		1968		1969		1970		1971		1972		1973		1974		mid-1975	
	Nos.	% Increase	Nos.	% Increase	Nos.	% Increase	Nos.	% Increase	Nos.	% Increase	Nos.	% Increase	Nos.	% Increase	Nos.	% Increase	Nos.	% Increase	Nos.	% Increase	Nos.	% Increase
TELEPHONE SERVICE																						
a. Local calls (millions)	105.3		113.4	7.7	125.9	11.0	135.2	7.4	146.1*	8.0*	157.7*	8.0*	170.3*	8.0*	184.0*	8.0*	198.7*	8.0*	214.6*	8.0*	223.2*	8.0*
b. Manual LD calls (millions)	3.95		4.25	10.1	4.83	11.0	5.29	9.5	5.29	0.0	5.20	-1.7	5.61	7.9	6.89	22.8						
c. STD calls (millions)	-		-		-		-		1.02*		4.14*	406*	6.92*	67*	7.87*	13.7*						
d. Total LD calls (b+c) (millions)	3.95		4.35	10.1	4.83	11.0	5.29	9.5	6.31*	19.3*	9.34*	48.1*	12.53*	34.1*	14.76*	17.7*	16.68*	13.0*	18.84*	13.0*	20.07*	13.0*
e. International calls (thousands)	18.88		29.35	29.0	32.93	35.2	41.02	24.6	51.98	26.7	78.86	51.7	160.8	103.9	237.7	47.8	286.5	20.5	343.7	20.0	378.1*	20.0*
OTHER SERVICES																						
f. Telex local calls (thousands)	14.18		15.34	8.2	19.46	26.9	21.56	10.8	36.02	67.0	38.16	5.9	38.23	0.2	38.42*	0.5*	38.8*	1.0*	39.19*	1.0*	39.54*	2.0*
g. Telex LD calls (thousands)	7.38		21.21	187.4	43.35	104.4	72.88	68.1	82.92	13.8	82.59	-0.4	80.61	2.4	80.93*	0.4*	81.74*	1.0*	82.56*	1.0*	83.39*	2.0*
h. Telex international calls (thousands)	11.65		18.18	56.1	26.85	47.7	38.51	43.4	45.50	18.2	56.63	24.5	73.67	30.1	120.0	62.9	182.1	51.8	273.2*	50.0*	341.5	50.0*
i. Printergrams (thousands)	139.9		146.5	4.7	128.8	-12.0	96.1	-25.4	118.1	22.9	118.5	0.3	125.8	6.2	132.9	5.6	139.6	5.0	146.6*	5.0*	151.0	6.0*
j. Inland telegrams (millions)	0.92		0.97	5.5	0.97	0.0	1.02	5.6	1.03	0.3	1.05	2.5	0.99	-6.3	0.96	-2.8	1.01	5.2	1.06*	5.1*	1.09*	5.8*
k. International outgoing words (millions)	13.71*		13.31*	-2.9	13.03	-2.1	12.70	-2.5	13.97	10.0	13.04	-6.7	12.85	-1.5	13.90	8.2	14.12	1.6	14.26*	1.0*	14.40*	2.0*
l. Radiocalls (thousands)	35.2		43.2		51.1		68.5		62.2		69.2		92.4		101.5		106.5		111.9*		115.2*	
m. Radiocalls telegrams (thousands)	2.5		1.9		4.4		2.6		2.2		1.7		2.0		2.8		3.2		3.7*		4.0*	

^{a/} Totals for 1965-1974 are yearly. Totals for 1975 are mid-year forecasts. All growth rates (% columns) are annual.

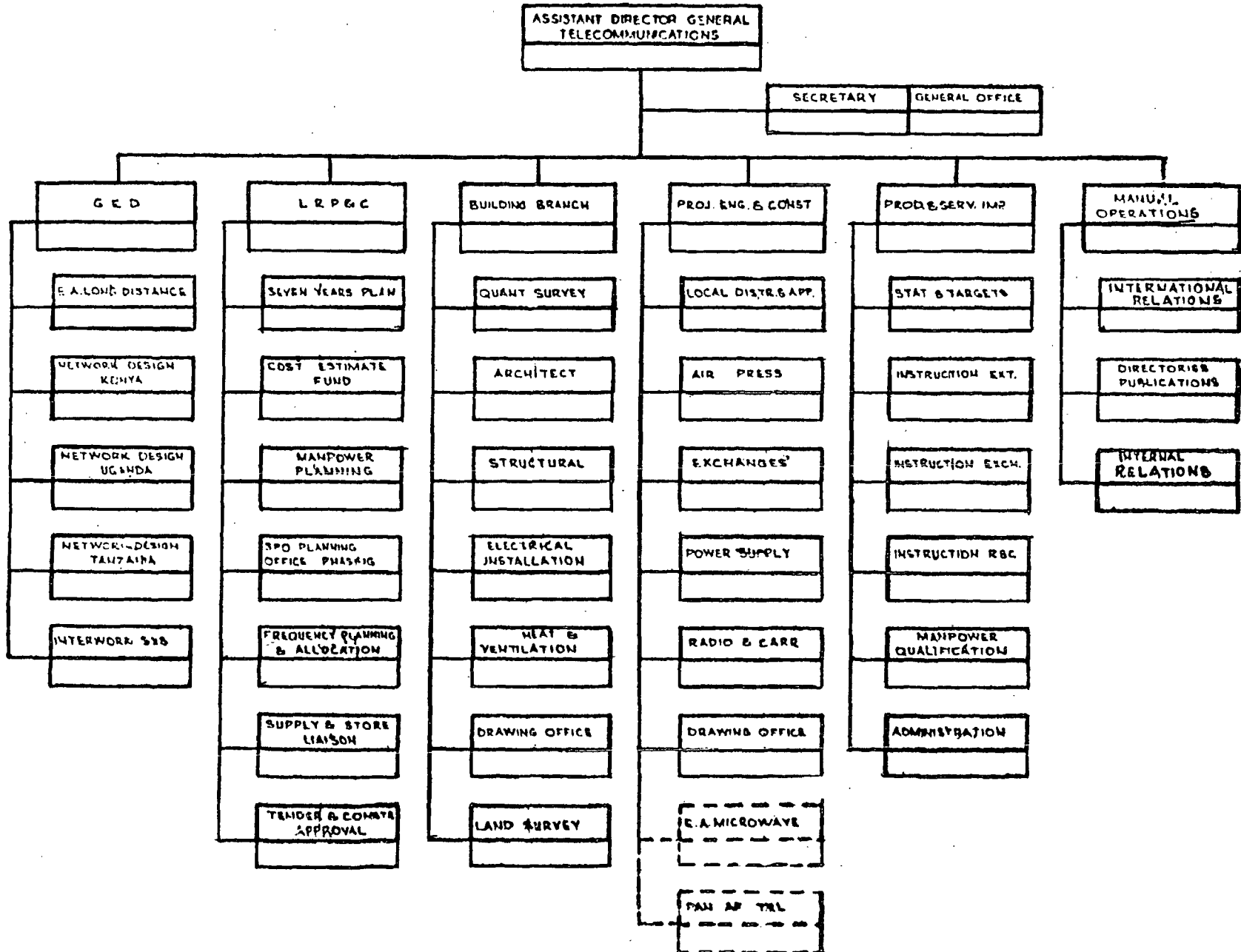
^{b/} Over preceding year

* Estimated or forecasted

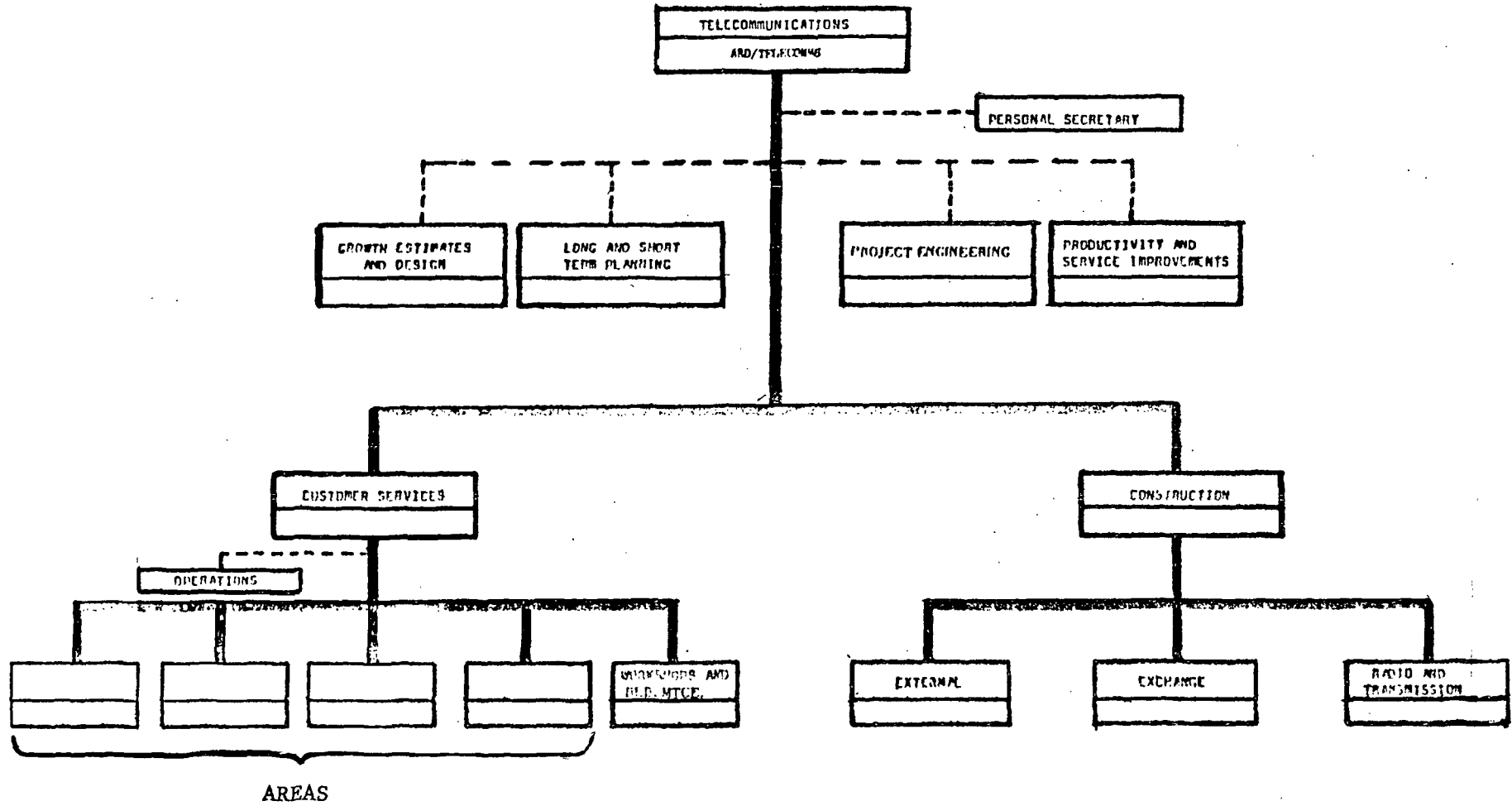
ORGANIZATION CHART OF THE
E.A.P.&T. CORPORATION



EAPTC Telecommunications
Headquarters Organization



EAPTC Regional Telecommunications Organization
(3 regions: Kenya, Uganda, Tanzania)



Allocation of Loans Proceeds

Loan 483-EA

	-- US\$ millions equivalent --		
	Appraisal	Modified 1968	Final
1. Urban exchange equipment	4.10	4.81	5.24
2. Urban outside plant materials	3.30	3.30	3.38
3. Inter-urban long lines materials	0.70	0.70	0.65
4. Inter-urban radio equipment	2.00	2.04	1.93
5. Inter-urban carrier equipment	1.30	1.05	0.78
6. Telegraph equipment	0.70	1.10	1.02
7. Unallocated	0.90	-	-
TOTAL	13.00	13.00	13.00

Loan 675-EA

	-- US\$ millions equivalent at appraisal --		
	Bank Loan	Swedish Credit	Bank Loan disbursements up to March 12, 1975
1. Local telephone exchange equipment	2.200	1.100	1.360
2. Outside and subscribers plant	2.400	1.200	2.310
3. STD equipment	0.354	0.177	0.444
4. Inter-urban radio and wire trans- mission and channeling equipment	3.926	1.963	4.956
5. Telegraph and telex equipment	0.600	0.300	0.760
6. Buildings and Miscellaneous	0.134	0.067	0.004
7. Consultants	0.080	0.040	0.030
8. Unallocated	0.706	0.353	0.706
TOTAL	10.400	5.200	9.860

EAST AFRICAN POSTS AND TELECOMMUNICATIONS CORPORATION
OPERATING ACCOUNTS 1966-75
(Thousands of EA sh.)

	1966 ^{a/}	1967 ^{a/}	1968 ^{a/}	1969 ^{b/}	1970 ^{b/}	1971 ^{b/}	1972 ^{c/}	1973 ^{d/}	1974 ^{e/}	1975 ^{e/}
OPERATING REVENUE - TELECOMMUNICATIONS										
Telephone	93,540	100,420	112,740	133,180	160,780	196,443	257,124			
Telegraph	22,760	19,780	19,940	16,420	17,400	17,900	16,744			
Telex	3,180	4,440	6,200	12,140	12,180	20,721	19,270			
Miscellaneous	1,880	2,100	2,440	1,420	1,400	1,700	2,760			
TOTAL OPERATING REVENUE	121,360	126,740	141,320	163,160	191,760	236,764	295,898	343,050	368,800	568,510
OPERATING EXPENSES - TELECOMMUNICATIONS										
Operation and maintenance	48,480	50,060	54,340	60,460	71,740	80,400	103,999			
Provision for pension liabilities	8,380	8,780	8,940	9,520	10,140	10,830	12,578			
Training, including salaries	5,320	6,040	6,840	7,040	8,020	8,618	9,985			
Depreciation	12,780	13,720	18,600	21,640	24,140	26,337	28,649			
Payment for international services	25,980	14,120	16,560	19,000	20,580	35,728	40,684			
Miscellaneous	4,840	4,600	4,560	4,460	6,720	7,040	7,276			
TOTAL OPERATING EXPENSES	95,360	97,320	109,840	122,120	141,340	168,953	203,171	238,440	294,602	420,036
Net operating income - telecommunications	26,000	29,420	31,480	41,040	50,420	67,811	92,727	104,610	74,198	148,474
Net operating income - postal	8,420	5,960	7,840	7,060	4,100	9,339	6,236	(9,650)	(17,058)	5,006
TOTAL NET OPERATING INCOME	34,420	35,380	39,320	48,100	54,520	77,150	98,963	94,960	57,140	153,480
Net other income	(2,180)	1,520	1,780	2,760	540	1,539	4,834	7,160	8,000	9,000
NET INCOME BEFORE FIXED CHARGES	32,240	36,900	41,100	50,860	55,060	78,689	103,797	102,170	65,140	162,480
FIXED CHARGES										
Interest	11,940	11,920	13,340	15,100	15,380	13,540	10,100	19,200	22,170	16,720
Other financial charges	1,000	4,240	60	40	80	40	90	100	120	120
TOTAL FIXED CHARGES	12,780	16,160	13,400	15,140	15,460	13,580	10,190	19,300	22,290	16,840
NET INCOME (LOSS)	19,300	20,740	27,700	35,720	39,600	65,109	93,607	82,820	42,850	145,640
AVERAGE PLANT										
Telecommunications	216,060	233,420	271,600	300,740	330,184	360,495	389,494			
Total	251,360	267,180	306,100	340,480	373,764	406,637	449,652			
RATES OF RETURN										
Telecommunications	12.0%	12.6%	11.6%	13.6%	15.3%	18.8%	23.8%			
Total	13.7%	13.2%	12.8%	14.1%	14.6%	19.0%	22.0%			
OPERATING RATIO										
Telecommunications	79%	77%	78%	75%	74%	71%	69%			

- a/ Source: 675-EA Appraisal Report
b/ Source: 914-EA Appraisal Report
c/ Source: Supervision report, March 21, 1974
d/ Source: EAPTC provisional figures as on January 1975.
e/ Source: EAPTC forecast for 1974 as on January 1975 (tariff increase included)

EAST AFRICAN POST AND TELECOMMUNICATIONS CORPORATION
BALANCE SHEETS 1966-1972
(Thousands of EA sh)

	<u>1966^{a/}</u>	<u>1967^{b/}</u>	<u>1968^{b/}</u>	<u>1969^{e/}</u>	<u>1970^{c/}</u>	<u>1971^{c/}</u>	<u>1972^{d/}</u>
ASSETS							
FIXED ASSETS							
Telecommunications plant	348,740	389,160	455,000	482,404	532,724	589,586	644,771
Less = depreciation	120,140	130,000	146,940	166,800	187,960	213,360	242,009
Net telecommunications plant	228,600	259,160	308,060	315,604	344,764	376,220	402,762
Net postal plant	41,180	36,800	40,180	42,016	45,144	47,140	73,176
Total fixed assets, net	269,780	295,960	348,240	357,620	389,908	423,366	475,938
Work in Progress				24,880	22,332	21,009	25,452
OTHER INVESTMENTS							
EXTELCOM Shares	7,800	7,800	7,800	7,800	7,800	7,800	7,800
CURRENT ASSETS							
Cash	3,620	7,680	5,080	9,720	14,040	23,500	29,834
Accounts receivable	46,560	50,080	54,600	55,360	73,840	83,683	110,080
Stores	22,900	37,640	38,160	49,420	51,440	70,202	116,378
Total current assets	73,080	55,400	97,840	114,500	139,320	177,385	256,292
TOTAL ASSETS	350,660	399,160	453,880	504,800	559,360	629,560	765,482
LIABILITIES							
Capital and reserves	97,720	141,480	148,440	185,240	241,020	304,001	404,591
Pension Fund liability	14,280	32,620	44,700	53,560	63,220	52,280	52,190
Long-term debt, net	216,780	191,640	213,640	217,860	205,660	226,550	208,360
Current liabilities	21,880	33,420	47,100	48,140	49,460	46,429	100,341
TOTAL LIABILITIES	350,660	399,160	453,880	504,800	559,360	629,560	765,482
Debt/equity ratio	69/31	61/39	64/36	60/40	53/47	48/52	34/66
Current ratio	3.3	1.7	2.1	2.4	2.8	3.8	2.5

- a/ Source: 483-EA Appraisal Report
b/ Source: 675-EA Appraisal Report
c/ Source: 914-EA Appraisal Report
d/ Source: Supervision Report, March 21, 1974

EAST AFRICAN POSTS AND TELECOMMUNICATIONS CORPORATION
SOURCES AND APPLICATIONS OF FUNDS 1966-1974
(Thousands of EA shilling)

	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
SOURCES OF FUNDS										
INTERNAL CASH GENERATION										
Net income before fixed charges	28,780	36,900	41,100	50,860	55,060	78,689	103,800	102,120	65,140	162,480
Depreciation provision - telecommunications	12,740	13,720	18,600	21,640	24,140	26,337	28,650	32,200	34,900	38,200
Depreciation provision - postal	800	800	800	840	900	1,000	1,100	1,250	1,400	1,600
Total cash generated	42,320	51,420	60,500	73,340	80,100	106,026	133,550	135,570	101,440	202,180
BORROWINGS										
IBRD Loan 483-EA	2,000	17,520	15,640	20,940	11,100	15,249	2,960	1,500	2,250	
IBRD Loan 675-EA						8,891	23,843	7,000	30,000	46,000
IBRD Loan 914-EA								18,000	45,000	60,000
British compensation loans, and others	4,620							7,000		
Pension Fund		18,340	12,080	8,860	9,660					
Total borrowings	6,620	35,860	27,720	29,800	20,760	24,140	26,803	33,500	77,250	106,000
OTHER SOURCES										
Capital contributions by subscriber	200			200	400	400	620	580	600	600
Interest etc. in sinking fund	2,020			3,080	11,900	8,660	5,560	5,540	8,500	500
Decrease (increase) in current assets and other		20,400	7,920	(11,000)	(19,180)	(31,636)	(18,560)	(15,220)	(35,000)	22,000
Increase (decrease) in Pension Fund under investments								6,000		
Withdrawals of sinking funds					81,420	300			34,760	
UK Bank overdrafts								14,830	(14,830)	
Total other sources	2,220	20,400	7,920	(7,720)	74,540	(22,276)	(12,380)	11,830	(5,970)	20,900
Total sources of funds	51,160	107,680	96,140	95,420	175,400	107,890	147,973	180,900	172,720	287,280
APPLICATIONS OF FUNDS										
CONSTRUCTION										
Telecommunications	29,140	40,420	65,840	53,480	43,860	52,715	79,160	102,800	110,210	145,000
Postal	5,600	4,380	4,180	3,260	5,040	5,020	7,620	27,230	25,720	26,000
Total construction	34,740	44,800	70,020	56,740	48,900	57,735	86,780	130,300	135,930	171,000
DEBT SERVICE										
Interest	11,680	16,160	13,400	15,110	15,460	13,580	10,190	19,300	22,290	16,840
Quantization	11,200	42,660	15,320	16,900	104,720	25,115	44,283	26,360	38,480	30,480
Total debt service	22,880	58,820	28,720	32,040	120,180	38,695	54,473	45,660	60,770	47,320
OTHER APPLICATIONS										
Purchase of EXTELCOM shares									10,400	5,200
Suppl. provision for pension liabilities				2,000	2,000	2,000	390	2,000	2,000	2,000
Total other applications				2,000	2,000	2,000	390	2,000	12,400	7,200
Total application of funds	57,620	103,620	98,740	90,780	171,080	98,430	141,643	177,960	209,100	225,520
CASH SURPLUS (DEFICIT)	(6,460)	4,060	(2,600)	4,640	4,320	9,460	6,330	3,210	(36,380)	61,760
CASH BALANCE BEGINNING OF YEAR	10,080	3,620	7,680	5,080	9,720	14,040	23,500	29,830	33,040	(3,340)
CASH BALANCE END OF YEAR	3,620	7,680	5,080	9,720	14,040	23,500	29,830	33,040	(3,340)	58,420

Source: Bank Appraisal Reports and EAPTC. Figures for 1973 are EAPTC's provisional ones, as at January 1975 which those for 1974 and 1975 represent -- EAPTC's estimates a forecast respectively as at January 1975. Allowance is included for the February 1975 tariff increase.

EAST AFRICAN POSTS AND TELECOMMUNICATIONS
FINANCING PLANS AND ACTUALS
(thousands EA sh)

	<u>1966-70</u>		<u>1970-72</u>	
	<u>Financing Plan 483-EA</u>	<u>Actuals</u>	<u>Financing Plan 675-EA</u>	<u>Actuals</u>
Construction				
Telecommunications	190,460	232,740	254,460	175,735
Postal	22,400	22,460	29,000	17,680
Miscellaneous	5,200		7,800	
Increase in working capital				
Cash	22,440	3,960)		20,110
Other	(13,320) ^{a/}	1,860)	1,320	69,376 ^{b/}
Pension liabilities			16,000	(5,270)
TOTAL:	227,180	261,020	308,580	277,631
Net internal cash generation	128,700	143,460	169,200	214,168
Borrowings				
Pension Fund		44,940		
Loan 483-EA	92,680	67,200	27,440	29,309
Loan 675-EA			111,340	32,734
Miscellaneous	4,620	4,620		
Total Borrowings	97,480	116,760	138,780	62,043
Subscribers capital contributions	1,000	800	600	1,420
TOTAL:	227,180	261,020	308,580	277,631

^{a/} Expected reduction in accounts receivable.

^{b/} Increase in accounts receivable (54,620)
and in stores, net of current liabilities (14,757).

