Report No. 1756-EGT

Egypt: ARETO Appraisal of the Second Telecommunications Project

February 22, 1978

Energy, Water and Telecommunications Department
Europe, Middle East and North Africa Regional Office

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CURRENCY EQUIVALENTS

US$1 = LE 0.70

LE 1 = US$1.43

MEASURES EQUIVALENTS

1 kilometer = 0.6214 miles

1 mile = 1.6094 kilometers

FISCAL YEAR

January 1 to December 31

LIST OF DEFINITIONS, ABBREVIATIONS AND ACRONYMS USED IN THE REPORT

Arab Fund	:	Arab Fund for Economic and Social Development
ARETO	:	Arab Republic of Egypt Telecommunications Organization
CAO	:	Central Auditing Organization
Carrier	:	A system providing a number of circuits (telegraph or telephone) through one transmission bearer (radio, cable or open wire)
Channel	:	One circuit of a carrier system carrying speech or telegraphic signals
Coaxial Cable	:	A cable with a center conductor surrounded by a coaxial outer conductor. It is used for high-capacity transmission systems
Crossbar Switching	:	An automatic telephone switching system utilizing a connecting matrix with horizontal bars and vertical bridges
CTC	:	Continental Telephone Corporation
DELs	:	Direct exchange lines (connected)
Electronic Switching	:	An automatic telephone or telex switching system electronically controlled
GHz	:	Gigahertz (1,000 megahertz)
HF/VHF/UHF	:	High frequency radio up to 30 MHz/very high frequency radio between 30-300 MHz/ultra high frequency radio beyond 300 MHz
MHz	:	Megahertz
Microwave	:	Radio system working at frequencies above 300 MHz but normally applied to systems working at frequencies above 1,000 MHz
PABX	:	Private Automatic Branch Exchange
PCM	:	Pulse Code Modulation
Rotary	:	A type of centrally motor driven rotary telephone switching system
SAS	:	Standardized Accounting System
Saudi Fund	:	Saudi Fund for Development
STD	:	Subscriber Trunk Dialing
Telex	:	Teleprinter exchange system
TRC	:	Telecommunications Research Center
TTRI	:	Telecommunications Training and Research Intitute
UNDP	:	United Nations Development Program
USAID	:	United States Agency for International Development

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

APPRAISAL OF THE SECOND TELECOMMUNICATIONS PROJECT

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ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

APPRAISAL OF THE SECOND TELECOMMUNICATIONS PROJECT

SUMMARY AND CONCLUSIONS

i. This report covers the appraisal of the second telecommunications project in Egypt, for which an IDA Credit of US$53.0 million is proposed. The borrower would be the Government of the Arab Republic of Egypt and the beneficiary would be the Arab Republic of Egypt Telecommunications Organization (ARETO), which has responsibility for the public telecommunications services in the country.

ii. Telecommunications services in Egypt are insufficient and the quality of service is poor. There is urgent need for rehabilitation of existing equipment, removal of present congestion in traffic, and meeting the most urgent and priority requirements for expansion of the services. These inadequacies have had an adverse effect on all sectors of the Egyptian economy, which cannot develop with maximum efficiency without adequate telecommunications facilities.

iii. The proposed IDA project follows up IDA Credit 548-EGT of 1975 in support of the efforts by ARETO to improve services to existing subscribers and expand facilities to meet some of the pending demand. IDA's participation is expected to consolidate measures initiated under the first project for much needed improvement in ARETO's day-to-day operations. Early in 1977, Government appointed Continental Telephone Corporation (CTC), USA, to (a) carry out a comprehensive study of the telecommunications sector, its developmental needs and constraints, (b) prepare a master plan for sector development, and (c) propose remedial actions.

iv. ARETO's internal organization, despite improvements since the appraisal of the first project in 1975, still suffers from some weaknesses, especially in the planning, accounting, tariffs and financial areas. ARETO's civil works program has also been delayed in the past mainly due to diversion of labor to other high priority works. Further measures to enhance ARETO's operational efficiency and financial performance are part of the proposed project and assurances have been obtained from Government and ARETO for their implementation. In addition, ARETO's relationship with Government requires improvement in several areas, e.g., financial arrangements between Government and ARETO. These arrangements, which are common to public sector corporations, and some internal reorganization needs are the subject of in-depth review by the CTC consultants. Government and ARETO have agreed to give IDA a reasonable opportunity to exchange views with Government and ARETO on the recommendations of the consultants.

v. The project identified for the second IDA credit to the telecommunications sector comprises the most urgent works to be undertaken by ARETO in the 1978-80 period. These consist of installation of about 226,400 lines for replacement (18%) and expansion of local telephone systems (82%) in the country, relieving somewhat the very large outstanding demand. The long distance services will be improved with additions of about 5,000 lines of trunk exchange equipment. Telex services will be expanded with an additional 3,000 lines telex exchange in Cairo.

vi. The project is estimated to cost about LE 147 (US$210) million with a foreign exchange component of about LE 90 (US$128) million. Of the US$128 million total foreign exchange cost of the project, US$69 million has been secured under bilateral loans and suppliers' credits. The proposed IDA credit would provide US$53 million, leaving a balance of US$6 million to be financed by Government. In addition, Government and ARETO will provide the local costs of the project estimated at LE57 (US$82) million. The project would be executed by ARETO with assistance from the equipment suppliers. ARETO has agreed to assign the preparation of tender documents and installation of electronic telephone exchange equipment to qualified experts. Government agreed to give priority for the construction of buildings required for project installations.

vii. All procurement under the proposed IDA credit would be subject to international competitive bidding in accordance with Bank's guidelines for procurement.

viii. ARETO's financial performance through 1975 was below the results anticipated in the appraisal of the first project, mainly because tariffs were not adjusted to offset rising operating costs. In 1976 ARETO complied with the minimum 11% return on assets and is expected to do likewise in 1977. With the implementation of revenue improvement measures starting from July 1977, ARETO is expected to exceed, beginning in 1977, an 18% return on historically-valued assets. Internal resources would represent an acceptable portion (13%) of ARETO's large 1978-80 investment program, after servicing all debt. The project is technically and financially sound and economically justified. Its internal financial rate of return is estimated at 16% and the economic rate of return is expected to be of the order of 23% on a conservative basis.

ix. The proposed project forms a suitable basis for an IDA credit of US$53.0 million equivalent to Government for onlending to ARETO.

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

APPRAISAL OF THE SECOND TELECOMMUNICATIONS PROJECT

I. INTRODUCTION

1.01 The Government of Egypt has requested IDA assistance in financing the (1978-80) development program of the Arab Republic of Egypt Telecommunications Organization (ARETO), the Government Board responsible for public telecommunications facilities in Egypt. If approved, this would be the second IDA credit for telecommunications in Egypt.

1.02 In 1974, when IDA was invited to participate in the financing of the telecommunications sector in Egypt, ARETO's physical and financial condition was very poor and the objectives of the first IDA supported project were quite modest under the circumstances. The US$30 million credit extended in 1975 was to help finance ARETO's 1975-77 program aimed mainly at rehabilitation of existing telephone network and improvements of service to existing subscribers. Along with these, IDA initiated measures with Government and ARETO for some improvements in its organization. Project execution is about two years behind appraisal expectations mainly because of initial delays in civil works caused by diversion of labor and materials by Government to other higher priority works. This has been overcome, and the project is now expected to be completed by the end of 1979. Some progress has also been achieved in the organization of ARETO and some order has been achieved in ARETO's finances.

1.03 The proposed second telecommunciations project will consolidate the institution building measures initiated under the first project and support ARETO's 1978-80 program. The program is designed to continue urgent rehabilitation works and provide some of the much needed expansion of the local and long distance telecommunications facilities during the 1978-80 period. Government has appointed Continental Telephone Corporation (CTC), USA, financed by USAID, to carry out a comprehensive study of the major constraints affecting the telecommuniations sector and recommend measures to overcome them. The results of this study are expected in mid-1978. IDA will have opportunity to review the study and recommendations and continue to assist ARETO with further steps towards making it a reasonably efficient and viable entity.

1.04 This report is based on information provided by ARETO and on the findings of a mission composed of Messrs. S. A. Sathar, J. Acevedo-Navas and R. J. Saunders, which visited Egypt in May 1977.

2. THE SECTOR

Background

2.01 Public telecommunications facilities in Egypt are state-owned. The Arab Republic of Egypt Telecommunications Organization (ARETO), attached to the Ministry of Communications, is responsible for the operation, management and development of all public telecommunications facilities in the country. Basic data on existing facilities is given in Annexes 1 and 2. The Suez Canal Authority, defense service, railways, and civil aviation authorities do, however, maintain telecommunications facilities for their own specialized needs.

2.02 Some items of telecommunications equipment and cables are manufactured in Egypt. The state-owned Egyptian Telephone Company attached to the Ministry of Communications produces crossbar telephone switching equipment and telephone instruments under license from L. M. Ericsson of Sweden. The state-owned Electro Cable, Egypt, attached to the Ministry of Industry, produces wires and underground cables for telecommunications and electric power. Both factories are reasonably efficient. Production of the factories does not however cover the full range of ARETO's needs and ARETO has to rely on substantial imports of telecommunications equipment and cables.

2.03 The population of Egypt is concentrated in cultivated areas of the Nile Valley and Delta Region, and is becoming increasingly urbanized. In fact, in relation to its very limited habitable area, Egypt has one of the highest population densities in the world, with over 1,000 persons per square kilometer. In 1976 over 27% of the population lived in the greater Cairo and Alexandria areas, and overall about 44% resided in towns and cities with a population greater than 20,000. It is estimated that in 1985 over 50% of Egypt's population would live in urban areas. This concentration of population particularly in the valley of the Nile, the Delta, and the Canal area has brought considerable pressure on telecommunications facilities to service its needs. In addition, given its tourism potential, its large market, relatively skilled population, low wages, varied raw materials and a key geographical location -- which makes it a natural base for industries that wish to supply the growing domestic and regional markets -- Egypt's inadequate telecommunications system is a significant constraint on the development process.

Access to Telephone Service

2.04 Egypt's telephone density of 1.34 telephones per 100 population is significantly lower than that of other Mideastern countries (Iran - 2.00; Turkey - 2.52; Syria - 2.30; Iraq - 1.69) (see Annex 3). The telephone density is about 5.0 in Cairo and 3.4 in Alexandria, compared with Algiers - 9.5; Teheran - 8.2 and Manila - 23.2. The overall average for the country excluding Cairo and Alexandria is only 0.44. Even primary access to telephone service, e.g., by a public call office, is still not available in as many as 1,000 village communities.

2.05 Telephone availability 1/ in Egypt has been deteriorating at a rapid pace during the last decade because of a long period of stagnation in investment. It declined from 96.9% in 1968 to 56.8% in 1976 (see Annexes 4 and 5). According to the registered telephone waiting list of ARETO, the number of waiting applicants has risen during the same period from 15,500 to 268,000 2/ which is about 76% of the number of existing connections. Actual unsatisfied demand, however, is likely to be higher since registered telephone waiting lists tend to understate demand because they are not kept in those towns and rural areas where telephone service does not exist and because the long waiting periods discourage many potential subscribers from registering. An ordinary applicant in some areas of Cairo has to wait for as much as 14 years for a telephone. The situation is slightly better in Alexandria and principal cities of Upper and Lower Egypt.

Quality of Telephone Service

2.06 The quality of existing telephone services is poor. Because of insufficient investment over many years, existing telecommunications facilities are grossly inadequate in relation to usage, resulting in severe peak period traffic congestion in local and long distance networks. In local exchanges, because of the inadequate supply of direct exchange lines existing telephones are used by a larger number of persons who keep lines busy a high proportion of the time for relatively long periods. These busy lines in turn lead to a high proportion of repeat calls, which worsens system congestion. Adding to the reasons for call failures are worn out switching equipment (about 16% of installed capacity) and faults on old and defective cables. In some exchanges subscribers simply cannot establish connections during peak traffic hours. The time required to clear technical faults is relatively long and as a result the number of complaints is high.

2.07 Long distance services between Cairo, Alexandria, and five other cities are provided with Subscriber Trunk Dialing (STD) facilities but access is limited in Cairo and Alexandria, because of the large number of subscribers still connected to the old rotary exchanges with technical limitations. The quality of the STD service between these seven cities is also poor due partly to problems in local networks, and to inadequacy of trunk switching equipment at Cairo, which is the hub of the STD network. The quality of the domestic manual long distance service is also poor with delays in putting through calls which may vary from three to six hours.

2.08 The international telephone services from Egypt are routed via a temporary earth station in Cario and via submarine cables from Alexandria to Italy and Lebanon. The service is reasonable. The quality of present international telex and telegraph services is satisfactory.

1/ Telephone availability is defined as a percentage of direct exchange lines (DELs) to the sum of DELs and waiting applicants.

2/ This estimate does not include waiting applicants in small towns currently served by manual exchanges.

Users of Telephone Service

2.09 Overall statistics of usage of telephones in Egypt by classification of user type are not available. A breakdown by type of subscriber for Cairo at end 1976 shows that, officially, business subscribers represent 47% of the total, Government 10% and residential subscribers 43%. ARETO's present tariff structure allows for a substantial number of free calls for residential subscribers. Subscribers other than proper residential get classified under this category, to avail of this preference, (their exact category determination being difficult for ARETO) resulting in a much larger number than actual under this classification. As far as usage is concerned, also as in other developing countries a sizeable portion of the telephones in residential premises are for actual business of business related use. Many of the residential telephones are used for business purposes during off peak business hours. ARETO estimates that in Cairo approximately 95% of all calls during peak traffic business hours -- this determines the system costs -- are business related. The situation in Alexandria is similar to Cairo. In the smaller towns and villages, the subscribers are almost entirely business or Government related.

Sector Constraints

2.10 The single major constraint which has impeded progress in the telecommunication sector has been the lack of adequate investment. 1/ As is mandatory with all Government Boards in Egypt, ARETO turns over to the Ministry of Finance any operating surplus in lieu of dividends and the Ministry of Finance in turn provides ARETO with budgetary funds for capital investment. This year to year supply of investment funds however is inconsistent with long term planning since the annual appropriations tend to be more dependent upon the macroeconomic budget pressures on Government than upon the sector investment needs or its earnings. ARETO's investment programs and works have been developed more or less on an ad hoc basis mainly dictated by availability of funds which has been far from adequate. In addition, this piecemeal arrangement also distorts the capital structure of ARETO which in turn increases ARETO's debt burden and debt service (see para. 6.01). Compounding this is the fact that ARETO's tariffs have not been changed since 1966 2/ despite

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1/ In 1973, 1974 and 1975, Egypt invested respectively an estimated 0.19%, 0.18% and 0.39% of GDP in telecommunications through ARETO. In contrast, a tabulation of 44 developing countries by the International Telecommunication Union revealed that in 1972 three-fourths of the countries invested more than 0.4% of GDP in telecommunications, over one-half more than 0.6%, and one-fourth more than 1.0%. The two countries with the highest 1972 telecommunications investment relative to GDP were Philippines with 4.0% and Papua New Guinea with 1.74%.

2/ Only exception is annual rentals for telex which were increased in July 1976.

domestic price inflation of more than 67% particularly in recent years. 1/ The unit revenue per Direct Exchange Lines (DEL) has also been low. User-based resources amounted to 20% of the relatively modest investment program during the 1974-76 period.

2.11 The investment situation has somewhat improved with IDA's support to the 1975-77 program of ARETO particularly for urgently needed rehabilitation but due to the long period of stagnation, and the huge backlog of demand, the needs for investment to meet demand are very substantial. The first telecommunications operation recognized also the institutional and organizational weakness of ARETO and initiated some measures for improvement particularly in day-to-day operational efficiency in the accounting, administrative and financial areas. Some progress has been achieved but ARETO still suffers from organizational weakness in several areas. These have been dealt with in detail in Chapter 5 (paras. 5.02 to 5.05 and 5.09).

Sector Objectives

2.12 Sector objectives have to be related to the nature of the sector problems, the sector constraints and the pressures of demand for good quality services on the one hand and to the practicability in the short and long-term to provide relief. The short-term objectives relate mainly to the organizational improvements badly needed for efficient functioning in day-to-day operations, with the undertaking of a modest development program with heavy emphasis on rehabilitation and improvement of services to existing subscribers. The long-term objectives of the sector are to overcome the very high backlog in demand, and to develop a sound financial basis and policies for ARETO to maintain sustained growth to provide satisfactory service at economic prices. In addition, the sector relationships, e.g., unsatisfactory financial relationship with Government, overstaffing and other undesirable features require attention.

2.13 The short-term objectives of the sector specifically could be stated to cover some basic essential and urgent steps for:

(a) improvement of the existing telephone services particularly in Cairo and meeting priority demand for telephone connections in the country;

(b) improvement of the long distance and international telephone services;

(c) expansion of the telex services; and

(d) consolidation of the steps initiated under the first project for organizational improvements in the administrative, financial and accounting areas within ARETO.

1/ The consumer price index in Egypt increased from a base of 100 in 1966/67 to 167 in June 1976.

IDA's proposed credit to the project, forming part of ARETO's investment program of 1978-80 and institution building measures incorporated in the project, are intended to meet these objectives (see para. 2.16).

2.14 The longer term objectives of overall telecommunication development to meet the demand and reorganize the entire sector need detailed study, particularly since implementation of some institutional improvements need a change in the legislation of the country as applicable to all public sector corporations. Government have appointed Continental Telephone Corporation (CTC), USA, to deal with all the problems and constraints impeding the sector's institutional framework, organization and development. This in-depth study was started May 1, 1977, under a USAID grant of US$4.3 million. The principal objectives of the study relating to long-term issues are (a) reviewing the organization of ARETO and its relation to Government and to Governmental and other agencies, (b) evaluating the performance of all existing telecommunications services, and (c) preparing medium (5-year) and long-term (15-year) master plan for sector development. A summary of the specific consultant tasks is given in Annex 6. CTC's final report is due by May 1978. Government and ARETO have agreed to inform IDA on progress on this study and afford IDA a reasonable opportunity to comment on the recommendations.

IDA's Role in Sector

2.15 The IDA credit for the first telecommunications project in 1975 in this sector was intended to help finance ARETO's 1975-77 program which provided for some rehabilitation and expansion of the telecommmunications service. Some improvements in the local and long distance and international services is expected as a result of the ongoing works. IDA also initiated some basic institutional reforms in ARETO's organization in the planning, accounting and financial areas. Some progress has been achieved with the introduction of a new headquarters organization (para. 5.03) and some tariff revision (para. 5.14). IDA also assisted in the preparation of the terms of reference of study by CTC (para. 2.14). IDA also assisted ARETO and the Saudi Development Fund in achieving significant cost savings in the purchase of goods needed for the project by suggesting technical changes to the specifications for coaxial cables and in the choice of telephone switching equipment.

2.16 Pending the results of the CTC study and its implementation, which is not expected to affect ARETO's development program effectively before 1980, IDA is supporting the efforts of ARETO in the near term objectives of (a) continued expansion and improvement of existing facilities, and (b) consolidation of steps for institution building. The proposed second IDA credit will help finance the most urgent works for rehabilitation and expansion of ARETO during the 1978-80 period. This no doubt will also improve considerably the quality of telephone service to existing subscribers and relieve somewhat the pending demand as well. In addition, IDA participation is expected to achieve (a) more systematic planning activities, (b) improvements in the accounting and financial organization, (c) valuation of assets, and (d) implementation

of tariff revisions to meet the prescribed rate of return and provide for adequate internal cash generation. Further, IDA will during this period keep in close touch with ARETO with a view to assisting ARETO in achieving its long-term objectives following the study and recommendations of CTC. Of particular interest to IDA on long-term measures are the master plan for development, the general organization of ARETO, its financial relationship with Government, the structure of tariffs and the causes for low revenues per exchange line. Because of the basic sector constraints coupled with massive investment needs, the effort needed to bring ARETO to a stable and efficient organization will be arduous and take many years.

3. THE PROGRAM AND THE PROJECT

The Program

3.01 ARETO's development program for the period 1978-1980 has been set out in detail in Annex 7 and includes the following:

(a) ongoing works carried over from the 1975-77 period including certain items of the project financed under Credit 548-EGT;

(b) new urgent and essential works constituting the proposed second telecommunications project; and

(c) other new works included in the present program of ARETO.

This program is estimated to cost about LE 315.9 million (US$452 million) with a foreign component of about LE 148.9 (US$213) million, details at Annex 11. The program is modest in relation to needs, and will meet only the urgent requirements for rehabilitation and expansion of telecommunications as set out in the short-term sector objectives (para. 2.13). In addition to the above program, ARETO may undertake some new works as a result of studies and recommendations of CTC (para. 2.14). Any substantial investments for these works is expected to fall beyond the 1978-80 period. ARETO agreed to exchange views with IDA on any additions to the program exceeding 10% of annual program expenditures.

The Project

3.02 The project consists of the most urgent new works to be carried out during the 1978-80 period providing for the following installations:

(a) about 102,400 lines of main automatic telephone exchange equipment in Cairo, 78,000 lines in other

principal cities, 25,000 lines in small towns and 15,000 lines in suburban Cairo; 1/

(b) about 6,000 lines of manual telephone systems in the rural areas;

(c) about 35,000 lines of PABXs;

(d) local and junction cable networks for about 75,000 subscriber connections with accessories and cable laying equipment;

(e) a coaxial cable Damiette-Mansura;

(f) automatic trunk exchanges of 5,000 lines additional capacity; and

(g) a 3,000 line telex exchange at Cairo and 2,000 teleprinters.

Cost Estimates

3.03 The estimated cost of the project is about LE 147.0 million (US$210.0 million) with a foreign exchange component of LE 89.6 million (US$128.0 million). The local costs include custom duties 2/ payable by ARETO on its imported equipment of about LE 9 million (US$13 million). The cost details are given in Annex 12 and summarized below:

1/ Out of these about 30,000 lines in Cairo and 5,900 lines in other principal cities are for replacement of existing old and obsolete equipment.

2/ Local taxes are not significant.

	--- in LE Million ---			-- in US$ Million --		
	Local	Foreign	Total	Local	Foreign	Total
Telephone exchanges	24.23	37.81	62.04	34.62	54.01	88.63
Subscriber equipment (including PABXs)	6.20	6.01	12.21	8.86	8.59	17.45
Cairo city junction microwave	2.80	7.70	10.50	4.00	11.00	15.00
Cables and accessories	10.15	12.29	22.44	14.50	17.56	32.06
Buildings for telecommunications equipment	3.76	0.24	4.00	5.37	0.34	5.71
Long distance network (including trunk exchanges)	0.20	9.97	10.17	0.29	14.24	14.53
Telegraphs and telex	2.70	5.95	8.65	3.85	8.50	12.35
Contingencies	7.36	9.63	16.99	10.51	13.76	24.27
Total	57.40	89.60	147.00	82.00	128.00	210.00

Contingencies

3.04 For a substantial part of the telephone exchange equipment which is to be procured from the Egyptian Telephone Company, detailed designs have been completed and no increase in quantities is expected. For the Cairo City junction microwave equipment and a major part of the long distance network also detailed engineering has been completed. In the case of cable networks, the dispersion of these networks between the various exchange areas permit additional requirements in certain of these to be compensated by reduction in others. No physical contingency has been provided for the above items. A physical contingency of 4% has been provided in the foreign and local costs of imported telephone exchanges, PABXs, telegraphs and telex equipment. Fixed price contracts have been entered into for some of the local and long distance telephone equipment and networks. Price contingencies have been applied for all other items based on an annual price escalation of (a) 7.5% in 1978-79 and 7% in 1980 in the foreign costs of equipment, and (b) 10% in 1978-80 in local costs of labor and civil works. These are considered adequate. The resulting estimated overall price escalation amounts to about 10.8% of the estimated base cost plus physical contingencies. Details of the contingency provisions are given in Annex 13.

Items Proposed for IDA Credit

3.05 The items to be financed by the proposed IDA credit are:

		US$ Million
(a)	Automatic telephone exchange equipment 60,800 lines	21.5
(b)	PABXs 15,000 lines	3.0
(c)	Telephone cables	10.0
(d)	Accessories for telephone cables and cable laying equipment	2.5
(e)	3,000 line telex exchange Cairo	3.5
(f)	2,000 teleprinters	5.0
(g)	Unallocated	7.5
	Total	53.0

The remaining foreign costs of about US$75 million for the project are expected to be available from USAID, France, L. M. Ericsson (Sweden) and from Government. The list of goods and sources of financing for the project is given in Annex 14 and also reviewed in para. 6.11.

Procurement

3.06 ARETO will procure all material and equipment financed by the IDA credit by international competitive bidding in accordance with IDA's Guidelines for Procurement. A 15% preference or the prevailing customs duty whichever is lower will be applied to bids from local manufacturers. (see para. 3.08). Apart from the IDA financed items, ARETO has contracted for 20,000 lines for replacement of Ramses telephone exchange from LME Sweden and ARETO will procure the rest of the telephone switching equipment mainly for expansion of existing exchanges from the domestic Egyptian telephone company which has an annual capacity of 30,000 to 35,000 lines per year. ARETO also intends to procure the small sizes of cables from the domestic Electro Cables. The price levels of these purchases from the domestic factories are satisfactory.

Execution

3.07 ARETO's staff have the capability of planning, designing and execution of most works under the project. Civil works execution by contractors in the past for ARETO have been delayed due to the low priority assigned by Government and Government agreed to give priority to ARETO's civil works in the project (para. 5.02). The main

works concerned are the telephone exchange buildings at Kubba and Maadi in Cairo and some locations in the provinces and construction of duct network for cables in urban areas. For the 30,000 lines of electronic telephone switching equipment to be installed in Egypt, ARETO will need assistance to prepare suitable specifications, and supervision of execution and commissioning. ARETO has agreed to assign these to engineering experts with adequate qualifications and experience. The installation of the new Cairo electronic telex exchange will be done with assistance from the suppliers. The PCM microwave junction network for Cairo financed by USAID will be executed under a turnkey contract. A schedule of construction for major works in the project is given in Annex 15. The project is expected to be completed by December 31, 1980.

Disbursement

3.08 The proposed credit will be disbursed for 100% of foreign expenditures for imported equipment and 100% of ex-factory prices of locally manufactured items (cables and accessories and some small quantities of telephone switching equipment), which may possibly be awarded to local factories; however, it is unlikely that the total value of such locally manufactured items would be significant. The closing date for the credit is expected to be December 31, 1981.

4. JUSTIFICATION

4.01 The justification of ARETO's total investment program is dealt with in this chapter, the IDA project being an integral part of the program.

Development Through Communication

4.02 As economic activity increases, communication needs grow, and as Egypt becomes increasingly developed and urbanized, the least cost means of communication for an increasing proportion of the population becomes some form of telecommunications. With rising urbanization and expanding private and public sector economic development, the supply of telecommunications facilities in Egypt has fallen far short of demand. This has been caused by stagnation in telephone expansion over a decade; the average rate of growth in telephone connections was only about 3.7% per year between 1967 and 1977 as compared with a normal 10 to 14% per year in most developing countries. In Egypt, with rapidly expanding telephone waiting lists, connection waiting periods of up to fourteen years, and call failure rates in some areas of over 75%, the production and distribution of goods, and the provision and administration of services are being adversely constrained. 1/ This is creating a major bottleneck in the development process and causing scarce resources to be wasted on more costly means of communication, or wasted because adequate communication does not take place.

1/ As in other developing countries telephones and telex in Egypt are primarily used as intermediate inputs in the production of goods and services (see para. 2.09).

4.03 The proposed project includes significant rehabilitation of existing facilities and the expansion of local and long distance facilities with a significant increase of PABX equipment. The project will enable more intense usage of local lines, and additional lines for both automatic and manual connections to (a) help slow the growth of telephone waiting lists and eliminate telex waiting lists, (b) reduce loss of time caused by having to make repeated call attempts, (c) reduce waste of resources consumed by higher cost means of communications, (d) reduce losses of production and marketing efficiency resulting from lack of communication, (e) satisfy part of the specialized communications needs necessary to exploit the potential for expansion of tourism, and (f) facilitate improvement in transport and delivery service in both urban and rural areas. Furthermore, to the extent that a more efficient and wider access to telephone service for Government and business results in the substitution of telephone communication for face-to-face communication, the growth of transport and energy costs will be slowed, as well as automobile traffic congestion in the urban areas.

Demand Forecast

4.04 Given the rapid growth in local telephone waiting lists (from 15,500 in 1968 to 268,000 in 1976) and the poor quality of both local and long distance service, it is impossible to forecast accurately the demand for telecommunications in Egypt. Current and historic traffic totals are of limited assistance since (a) experience in other countires, and an observed immediate four-fold increase in long distance traffic in Egypt on routes where limited STD have been introduced suggests that as quality of service improves, usage increases rapidly since the telephone becomes the least cost means of communication for an increasing variety of productive uses, and (b) the official telephone waiting lists in Egypt with their associated waiting periods of up to 14 years, undoubtedly do not reflect a considerable amount of latent demand.

4.05 ARETO has estimated that the demand for local telephone lines, which they define as the sum of direct exchange lines and official waiting lists, will increase from 620,000 in early 1976 to 844,000 in 1980 (see Annexes 4 and 5). While this is thought to be a conservative forecast, its lack of accuracy is not a binding constraint on the 1978-1980 expansion program since the planned increase in DELs over the period will not even satisfy the demand shown on current waiting lists.

Least Cost Solution

4.06 The least cost solution to the provision of telecommunications depends on (a) having made the correct technical and economic decisions, initially when the networks were planned, and (b) following the optimum path in the design, dimensioning and timing of the many installations which comprise continuing system expansion.

4.07 The local telephone and telex network designs and plant follow accepted practices to minimize costs. Continued use of locally manufactured

telephone switching equipment for a major part of the local exchange expansion program is justified in the case of Egypt by the need for standardization, savings in foreign exchange, lead time in supplies, and local employment potential. Import of substantial quantity of local exchange equipment is required to meet the needs over and above the present production of the factory and also to introduce electronic switching equipment in ARETO's network.

4.08 The dimensioning and timing of the works under the program, of which the project is an integral part, are based on individual engineering studies by ARETO designed to determine the least cost means for improving services to existing subscribers and meeting new demands.

Return on Investment

4.09 The internal financial rate of return on the investment program, defined as the discount rate which equalizes the stream of expected revenues (based upon existing tariffs, at constant 1977 prices) attributable to the program with the stream of capital and operating costs (at 1977 price levels), is 10% (Annex 17). Assuming consumers are willing to pay the increased tariffs which ARETO proposes to charge during the program period, the internal financial rate of return is 16%. Sensitivity analysis applied to this calculation shows that under the most unfavorable combinations of main parameters (increase of 10% each in capital and operating costs, 10% decrease in revenue and two-year delay in project completion) the rate of return would not be less than 12%.

4.10 With the increased tariffs, labor shadow priced at 75% of going wage rates and local taxes and duties excluded, the economic rate of return becomes 20%. However, the estimate of benefits based on revealed willingness to pay current tariff levels is a significant underestimate of total program benefits, since it does not include the consumer surplus which callers or subscribers receive. Attempts to measure some portion of the consumer surplus were made by (a) observing the historical willingness of subscribers to pay for telephone service, and (b) taking into account the apartment and office rent differentials which some consumers now pay to have a telephone, and estimating the value of time waste in Cairo and Alexandria on unsuccessful calls. Using these alternative methods, the quantifiable economic rate of return on the program is approximately 23% (Annex 17). This rate of return is still, however, a significant understatement of true program benefits since it does not include other elements of the consumer surplus, such as the savings in time lost throughout the country through wasted call attempts, nor benefits incurred by receivers of calls and by all other subscribers when additional subscribers pay to join the system, nor by those who benefit indirectly through the better administration of regional development, health, transport, and agricultural programs, and increased urban and regional business and Government efficiency.

4.11 The calculated economic rate of return is further understated because, while the costs are those for extending the network and providing facilities in newly served areas now, the full benefits are not included because the available capacity of various components of equipment installed under the current program will be fully realized only when additional investment is made in the future.

Other Economic Aspects

4.12 Despite the foregoing, it is unlikely that optimal investment decisions are being made in the sector; in particular, the methods currently used to deal with the massive waiting lists probably preclude the maximization of net benefits of sectoral development. While the internal economic rate of return on the program of 23% sufficiently justifies the investment, the problem remains that the acceleration of investment by an amount sufficient to meet the demand for new telephone connections in the foreseeable future is not feasible. It is essential therefore, that pricing and telephone allocation policies be directed toward maximizing the benefits of that investment which is available. This is unlikely to be achieved as long as services are primarily allocated by administrative means. While these means can be improved, continuing efforts must be made to increase annual rentals and connection charges, particularly in Cairo and Alexandria. Price does not currently play a significant role in rationing telephone connections or in assuring that telephones are available for the most productive purposes. The tariff increases proposed by ARETO are a first step toward the goals of compressing demand and increasing internal resource mobilization for telecommunications expansion, but stronger measures need to be taken in order to deal with this critical issue. When the findings of the CTC studies are available, IDA will explore with Government and ARETO further pricing measures aimed at influencing the allocation of services and increasing internal resource mobilization for telecommunications expansion.

4.13 Regarding telephone allocation, ARETO's practice has been that in exchanges where there is less than 10% of spare capacity available, telephone connections are allocated to some priority users by a committee composed of the Chairman and top officials of ARETO. Priority had been given to categories for which benefits were felt to be greatest (hospitals, doctors, schools, police, army, press, government offices, airlines and offices of engineers, lawyers and accountants). Most business firms desiring a telephone had to either (i) press for special consideration by the committee, (ii) rent a furnished office or apartment already having a telephone (so that the financial benefits of telephone shortages accrue to private landlords), or (iii) wait many years for telephone connection. This deficiency was partially overcome recently by ARETO expanding its allocation policy to give priority also to large business establishments. ARETO agreed to maintain this priority system which ensures continued access to telephone service to at least the largest business firms.

5. THE BENEFICIARY

Organization and Management

5.01 ARETO was established and is governed by Presidential Decree No. 709 of August, 1957, as amended by Decree No. 457 of February 1966. It is administered by a nine-member Board of Directors, consisting of the Chairman, who is ARETO's Chief Executive Officer, two representatives of the Ministry of Communications, three nominated by the Minister of Communications, one representative of the Ministry of Finance and two senior officers of ARETO. The Chairman is appointed by the President of the Republic. With the appointment of a new chairman and three vice chairmen in 1977 (para. 5.03), top and middle-management levels are staffed by competent and experienced officers.

5.02 As a Government Board, ARETO is empowered with adequate authority for day-to-day administration and operations. However, ARETO has not had control over the execution of civil works. Under previous arrangements ARETO indicated its requirements to the Government agency responsible for planning, engineering and supervision of civil works for Government Boards, which in turn entrusted the works to contractors for execution. Considerable delays occurred in execution which were accentuated by the diversion of labor and building materials to higher priority government works, e.g., Suez Canal area rehabilitation. This situation has improved considerably. Beginning January 1, 1978, ARETO has been free to call directly for bids both from public and private sector construction companies. In addition, Government has agreed that ARETO's civil works in the project will be given priority by Government to avoid the delays that occurred in the past. The question of adequate control and organization within ARETO to deal with civil works from design to execution is a long-term issue which will have to await the results of the study by consultants (see para. 2.14).

5.03 ARETO's internal organizational structure has undergone some change since the appraisal of the first project in 1975. The structure of the new organization which became effective in July 1977 is shown in Annex 18. One of the main changes is the creation of three posts of vice chairmen in charge of projects, finance and administration, and operations. This action conforms generally with our understanding with ARETO under the first project and should enhance ARETO's operating efficiency. An initial step in the organization for effective planning as required under the first project has also been taken by placing in the new set-up, the planning for all individual sectors such as local telephones, transmission and telex, etc., in one division under the Vice Chairman, Projects. This is a substantial step forward and in accordance with the agreement in the first project. The planning unit within ARETO should be capable of identifying priority demand, determining least cost solutions and undertaking works which together could contribute most towards improvement and expansion of services and bring in optimum benefits. It will need to continuously review the Master Plan under preparation by CTC (see para. 2.14) and also prepare the annual development programs. Progress in implementation of ARETO's undertaking under the first

project to strengthen its planning unit to provide for effective planning on a continuous basis still needs periodical review by IDA to get this satisfactorily implemented by ARETO.

5.04 The new organization does not, however, provide for a division to deal with all accounting matters which are at present performed by various separate units. Finance has been treated as a minor function, delegated to one of the sections under a Vice Chairman. There is need to coordinate and consolidate the finance and accounting functions to ensure effective management information for decision-making purposes. CTC is required to review these matters and IDA will keep in touch with ARETO to review the recommendations to overcome this situation (para. 2.14).

Staff

5.05 ARETO's staff at year-end 1973 during appraisal of the first project was about 41,000 with about 465,000 installed telephones, giving a ratio of about 88 employees per 1,000 telephones. ARETO's staff had increased by 1976 to about 51,990 (Annex 19) but the number of telephones have increased at a much lower pace to about 507,000 giving a ratio of about 103 employees per 1,000 telephones. ARETO, like other Government Boards, is subject to the Government policy of providing jobs for university graduates and returning military personnel, whether they are needed or not. Management is aware that present staff levels are in excess of requirements and is engaged in the preparation of studies to rationalize the situation and increase productivity. Pending the results of this in-house effort and of the study by CTC who are also reviewing this matter, ARETO's policy is to freeze the number of its staff at present levels and to limit its growth to that required by its expanding operations. ARETO thus projects its staff to increase to 65,000 by the end of 1980. Because of the substantial expansion in the number of telephones in service which ARETO is expected to achieve by 1980, this should result in the gradual lowering of the employee/telephone ratio to 92 employees per 1,000 telephones, which is acceptable.

Training

5.06 ARETO operates the Technical Training and Research Institute (TTRI) with training facilities in Cairo and six regional branches. Initially assisted by UNDP experts and fellowships, TTRI is now fully staffed by Egyptian instructors. Engineers, technicians and skilled workers are trained in the Cairo facility, and telephone, telegraph and radio operators are trained in the regional centers. TTRI also conducts refresher (on-the job) courses in various disciplines. Annex 20 shows by category the staff trained at the TTRI between 1972 and 1976.

5.07 There has been a great demand for Egyptian engineers, technicians and skilled workers in other parts of the Arab world. As such, a substantial number of ARETO-trained staff are attracted and take up jobs outside the country with much higher salary and benefits. This is, however, a country-wide problem affecting all sectors and skills. While the drain of trained staff no doubt affects overall operational efficiency, ARETO's existing training facilities are considered adequate to deal with needed manpower withour causing serious disruption.

Accounts and Audit

5.08 ARETO's accounting follows the Standardized Accounting System (SAS) applicable to all Government Boards since 1967. This system is on the accrual principle and is satisfactory.

5.09 Plant records are divided between the engineering and auditing departments without proper reconciliation. As a result, plant in service tends to be understated in the accounting statements. Plant records and other accounts were also incomplete. For example, some of ARETO's assets came as grants and were carried on the books at LE 1. This asset under-valuation was only partly compensated by other assets acquired at higher than normal costs. Under the terms of the existing IDA credit, ARETO agreed to complete valuation of its assets. Valuation through December 31, 1976, has been completed by an official and independent ad hoc committee (see para. 4 of Annex 26 for details). Arthur Young & Company, sub-contractors of the CTC consultants, are reviewing the accounting and financial management control systems, following which further significant improvements in these areas can be expected.

5.10 In accordance with its enabling legislation and SAS procedures, ARETO's accounts are pre-audited internally and post-audited on a continuing basis by the Government's Central Auditing Organization (CAO). Under the existing IDA credit, ARETO agreed annually to provide IDA audited financial statements together with the auditor's report and recommendations. These audits have been carried out and ARETO has made the reports available to IDA, although late in respect of audits through 1975. ARETO agreed to continue the existing audit covenant.

Billing and Collection

5.11 Despite inefficient billing and collection procedures and policies, but perhaps reflecting fear of disconnections during the protracted period of scarcity of new telephone connections, the overall level of receivables from private subscribers has been reasonable relative to the established billing cycle. Billing is done manually except in Cairo where there is both manual and computerized billing. Also, a three-month billing cycle and allowing accounts to age up to three months before they are considered delinquent results in charges accumulating for up to six months before disconnection is considered. Thus, there is lack of effective management control over billing and collections and, as a result, the amount of billing adjustments and write-offs, though not yet critical, has been increasing. Improvement, however, calls for changes in management policies and accounting procedures but implementation of the latter will take some time. The CTC consultants are also expected to formulate remedial actions in these areas.

5.12 Receivables from Government subscribers had been deteriorating through 1975. These arrears had been increasing gradually since 1957 (the time of ARETO's inception) as a result of (a) difference between amounts billed and lesser amounts approved for telecommunications services in the budgets of the various Government subscribers, and (b) unconscionable delays in settling usually petty disputes over billings and which on occasions have held up settlement of as much as a full year's billing. Under the terms of the existing IDA credit, Government and ARETO agreed to identify the disputed arrears by June 30, 1976 and to settle the outstanding balances by December 31, 1977. At the end of 1976, Government established a blocked account in the Central Bank with the estimated total value of the arrears (LE 10 million by then) pending resolution of the underlying disputes by a Government committee. Thus far, ARETO has received payment from the blocked account totalling LE 6.5 million. Service bills for the remaining LE 3.5 million are still under the scrutiny of the Government committee whose work is not expected to end before the end of 1978 because of the procedural complexities involved. In addition, to reduce the amount of overdue receivables from public sector entities, public sector consumers are now required to make advance monthly payments of one-twelfth of their budget allocations for ARETO's services. Moreover, with an improved budgeting system, ARETO's service bills are now being paid on a timely manner. Government and ARETO agreed (i) that all overdue debts by public agencies for services rendered by ARETO through December 31, 1977 will be settled by December 31, 1978, and (ii) that all future debts of Government subscribers for services rendered by ARETO will be settled within three months from the date of billing.

Insurance

5.13 Except for motor vehicles, ARETO does not provide insurance coverage on fixed assets for such risks as fire and theft. The cost of this coverage is high and ARETO management feels that the wide geographical dispersion of the assets provides a reasonable diversification of the risks. Moreover, as a Government Board, ARETO would be assisted by Government if serious losses occur. This is in line with the approach adopted by many state-owned telecommunications entities and is acceptable.

Tariffs

5.14 A summary of the principal telecommunications tariffs in effect on January 1, 1977 is given in Annex 21. They have been virtually unchanged since 1967 1/. The appraisal mission for the existing IDA credit found: (a) the income per DEL significantly lower than would be expected from a broad examination of the tariffs and the reportedly high traffic which was causing congestion in various parts of the network; (b) certain anomalies in

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1/ The only exception during this period has been telex rentals, which were increased from LE 200 to LE 600 effective July 1, 1976.

tariff structure which were not of major significance from the revenue-earning point of view; and (c) some restrictions--technical and administrative--on subscriber access to the STD network which in this sector is a significant source of revenue. Accordingly, IDA required Government and ARETO to review the tariffs and subscriber regulations, investigate causes for the low revenues, and implement remedial measures. Government, after consulting with IDA, has entrusted these studies to the CTC consultants, whose report is expected by May 1978 (para. 2.14).

5.15 Raising the tariff levels of ARETO is required to ensure adequate debt service coverage and a minimum acceptable contribution to capital investment. Therefore, under prodding by IDA in preparation for the substantially increased level of capital investment called for by ARETO's urgent 1978-80 rehabilitation/expansion program, ARETO's Board of Directors in June 1977 recommended Government approval 1/ of the revenue improvement measures detailed in Annex 22. The change to the parallel market rate for billing international services (measure No. 1) was put into effect July 1, 1977. ARETO advised IDA that the proposed doubling of telegraph service charges (No. 2) and of telephone installation, transfer and other similar fees (No. 3) and the increases in telephone trunk charges and trunk line leases (No. 4) will become effective immediately after Government sanction, but that implementation of the remaining measures would have to wait until service in the Cairo area has improved substantially, which is expected by the end of 1978. These measures together will gradually increase ARETO's revenues, reaching incremental revenues of 63% by 1980. Since implementation of all these measures is required to ensure a minimum acceptable user-based contribution to expansion (para. 6.10) and a satisfactory financial performance by ARETO, Government and ARETO agreed to implement measures Nos. 2, 3 and 4 as a condition of effectiveness of the proposed loan, thus allowing necessary time for the required administrative approval procedure. Also, taking into account ARETO's plans for improvements of telecommunications services, Government and ARETO have confirmed their intentions to implement the remaining tariff measures (or their equivalent in terms of their impact on ARETO's revenues) by January 1, 1979.

6. FINANCES

Background

6.01 ARETO's financial performance reflects largely the institutional framework under which it operates. As a Government Board it has no control over tariffs and over the bulk of its operating expenses--personnel costs. Its main financial problem--high indebtedness and hence debt service--stems from governmental stipulations and policies, specifically from its financial relationship with Government. Government is entitled to receive ARETO's net

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1/ In Egypt, any revision of the telecommunications tariffs must first be recommended by ARETO's Board of Directors, then approved by the Minister of Communications and finally authorized by Presidential decree .

income in lieu of dividends regardless of its level relative to Government's investment in ARETO, or ARETO's investment needs. The Ministry of Finance in turn provides ARETO with investment funds in the form of debt. Because of the burden of debt service on an ever increasing indebtedness, the level of ARETO's net generation of funds available for financing investment is materially lower than it would be under more conventional financing arrangements. These institutional financial constraints of ARETO -- common to all Egyptian Government-owned corporations -- are being reviewed by the CTC consultants but their resolution requires legislative reform which will take time. Pending such review and legislation, IDA's immediate objectives are limited to assuring adequate financing for the urgent rehabilitation/expansion program (including an acceptable level of user-based resource mob ilization) and the maintenance of otherwise financially acceptable standards by the beneficiary.

6.02 Annexes 23 through 26 contains financial statements covering the period 1973-80 together with details on ARETO's finances which supplement the following summary analysis.

Financial Performance

6.03 ARETO's past financial performance has been mixed. In 1973-75, its financial rate of return on historically valued assets averaged 9%, (below the 11% minimum agreed under the existing IDA credit 1/). ARETO's revenue per DEL averaged only US$137 per year in the 1973-76 period while corresponding revenues for countries at a similar stage of development were as follows (in US$ equivalent).

Ghana	Pakistan	Ethiopia	India
211	224	236	253

The positive rates of return, however, indicate that ARETO's low unit revenues are partly compensated by similarly low unit operating expenses.

6.04 The low returns attained in 1973-75 stemmed from imbalance between the staffing and pricing practices. Increases in the number of employees 2/ were allowed to outpace by far increases in productive assets (DELs) 3/ while tariff levels were kept unchanged. By year-end 1976, ARETO's staff

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1/ See para. 6.05.

2/ Averaging 8% per year.

3/ Averaging 2% per year.

exceeded the employee/telephone ratio attained at the beginning of 1973 by some 9,700 employees, or by about 23%. ARETO explained that the disproportionate staff increase resulted largely from Government employment policies (para. 5.05) which accounted for an increase of an estimated 8,900 employees or 92% of the excess staffing. It is estimated that the cost of the excess staff over the 1973-76 period amounted to 14% of the operating expenses and 8% of the operating revenues. Without this expense ARETO's financial rate of return would have ranged from 10 to 19% on the historically-valued assets, averaging a more acceptable 12%.

6.05 ARETO's earnings improved substantially in 1977. With the adoption, effective July 1, 1977, of the parallel market rate of exchange (then LE 1 = US$1.43) for purposes of billing in domestic currency its foreign currency based international telecommunications services, rather than the much lower official rate of exchange (LE 1 = US$2.56), which had been used up to that time, ARETO's rate of return is expected to reach 18% in 1977 and not to fall below 14% during the project construction period 1/. Thus, ARETO is now in compliance with the revenue covenant.

6.06 Debt service coverage has been adequate. Conventional liquidity (current ratio) has been ample. Immediate liquidity, however, had been poor in 1973-75 as evidenced by negative or minimal cash balances. ARETO has coped with this situation by withholding payments (issued checks subject to cash availability). The action on Government arrears mentioned in para. 5.12, restored ARETO's immediate liquidity to an adequate level by year-end 1976.

Financing Plan

6.07 A summary of ARETO's capital investment requirements during the 1978-80 project construction period and of the financing plan to meet them is as follows:

1/ Without taking into account other revenue improvement measures to be implemented during the project period, the rate of return, when these are also implemented, are forecast to be higher (see para. 6.13).

	LE	US$	% of Total
	(millions)		
INVESTMENT REQUIREMENTS			
Ongoing works	86.97	125	23
Proposed second IDA project	147.00	210	39
Other works	81.91	117	22
Total construction	315.88	452	84
Capitalized expenses	7.23	10	2
Increase in net working capital	53.43	76	14
	376.54	538	100
SOURCES OF FUNDS			
Gross internal cash generation	193.38	276	51
Less debt service	(143.70)	(205)	(38)
User-based resources	49.68	71	13
Foreign financing:			
Ongoing works	34.70	50	9
Proposed second IDA project 1/	81.64	117	22
Other works	20.64	29	5
Total foreign financing	136.98	196	36
Government financing:			
Government loans	196.11	280	52
Less net income transfer	(6.23)	(9)	(2)
Government financing 2/	189.88	271	50
	376.54	538	100

6.08 The investment requirements for construction correspond to ARETO's program as set forth in Chapter 3 and Annex 7. Though modest relative to the unsatisfied demand, programmed investment is nevertheless substantial. It

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1/ Excludes US$5.3 million of the proposed IDA credit which is expected to be disbursed in 1981.

2/ Because of other inflows (debt service and customs duties), Government's net financing of the sector amounts to LE 94 millions (para. 6.18), or 24% of the sector's investment requirements.

amounts to 1.5 times the estimated value of the gross fixed assets at year-end 1977. More significantly, it represents a rapid and sizeable acceleration in sector investment; it would average LE 108 million per year, compared with LE 35 million in 1975-77 and LE 7 million in 1973-74. Capitalized expenses reflect ARETO's practice of charging a portion of the operating costs (9% of the staff expense) to construction.

6.09 The financing plan is based on:

(a) full implementation of the revenue improvement measures in Annex 22 or their equivalent (para. 5.14);

(b) full foreign financing of those goods and services in the program suitable for ICB or for bilateral, supplier and regional fund financing; and

(c) Government meeting the financing shortfalls with long-term funds.

6.10 Provided program execution develops as anticipated (Annex 15) and expected productivity gains in unit revenues 1/ materialize, user-based resources would be sufficient to provide funds from internal resources to finance 13% of total investment. For purposes of this calculation, operating surpluses are not shown as a deduction in arriving at internal cash generation in view of the special arrangements in Egypt where surpluses are turned over to Government and returned to ARETO in the form of debt. Although somewhat low in absolute terms, this level of self-financing is acceptable considering: (a) the magnitude of the rehabilitation/expansion investment, which is needed to compensate in part for a long period of stagnation in sector investment; (b) that the benefits of the ongoing and project works only begin to accrue in a significant way in 1979 and build up materially (more than double 2/) after the project construction period; and (c) that the gradual implementation of the revenue-improvement measures provided for in the financing plan means a rise in the June 1977 overall tariff level of 63% by 1979, resulting in increasing annual contributions to investment (para. 6.13).

6.11 The direct and indirect foreign exchange costs of the program total US$213 million (LE 148.9 million equivalent, Annex 11). Of these, US$201 million represent goods and services suitable for foreign financing on acceptable terms. The remaining US$12 million represents the foreign exchange costs of raw materials and component parts for the Government-owned Electro Cable and Egyptian Telephone Company, Damiette-Mansura cable and of buildings needed to meet ongoing works (US$6 million) and project

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1/ See para. B.2 on page 2 of Annex 26.

2/ See para. 4 in page 1 of Annex 17.

requirements (US$6 million). During negotiations, Government agreed to provide this financing. Financing for the foreign exchange costs of the ongoing works (US$50 million) has been obtained. This includes US$15 million to be drawn down under the existing IDA credit. Planned foreign exchange borrowings for the proposed second IDA project (US$122 million) consist of the proposed US$53 million IDA credit (to be on-lent for a 20-year term including a three and one-half year grace period and to bear interest at the Bank rate), US$12 million from USAID, US$16.5 million in bilateral credit from France and suppliers' credits totaling US$40.5 million from L. M. Ericsson of Sweden. The latter includes about US$21 million for power plant and ancillary equipment to be imported by ARETO to complement supplies from the Egyptian Telephone Company, an L. M. Ericsson licensee. These financing arrangements have been finalized. Financing for the foreign exchange costs of the other works in the program (US$29 million) while not yet assured is expected to become available. Possible sources thus far include the Arab Fund, the Saudi Fund and France. These works will have to be reduced to the extent the required funds cannot be raised. Such reduction in investment would not however affect ARETO's earning capacity from the project works. Details of all the above-mentioned foreign exchange borrowing are given in Annex 26.

6.12 The US$280 million in loans from Government represent the gross residual financing required to carry out ARETO's full rehabilitation/expansion program. Of this, US$88 million would be required for the other works leaving US$192 million needed for the ongoing and project works. Government agreed to provide this financing. Of this total of US$280 million, US$150 million would be generated by the sector (US$ 9 million representing conversion into debt of ARETO's net earnings, US$97 million from debt service and US$40 million from customs duties, see Fiscal Impact, para. 6.18) leaving US$134 million to be provided from other budgetary resources. Government loans are expected to be available to ARETO as in the past for an average 13-year term, including a one-year grace period and bearing interest at 5% per year. The apparent element of subsidy resulting from this interest rate would be more than offset by the arrangement under which ARETO's surpluses are paid to Government and given back to ARETO as debt on which interest is levied.

Financial Outlook

6.13 Revenues have been projected based on ARETO's experience and taking into account plant additions and improvements, particularly of long-distance services provided for in the program. Operating expense projections include an inflation factor of 10% per year. A summary of the expected results excluding the effect of tariff measures Nos. 2 through 7 discussed in para. 5.15 (Column A) and including it (Column B) follows:

	1978		1979		1980	
	(A)	(B)	(A)	(B)	(A)	(B)
Operating revenues - LE million	56	58	71	92	93	120
Operating income - LE million	22	25	29	50	41	68
Operating ratio - %	60	57	59	45	56	43
Financial rate of return 1/ - %	17	20	14	25	14	24
Contribution to expansion - %	0	2	(2)	14	1	23
Debt service coverage - times	1.0	1.1	0.9	1.4	1.0	1.5
Debt/equity ratio	3.5	3.3	4.2	3.0	4.5	2.6

6.14 The financial projections indicate that without the implementation of the proposed tariff measures Nos. 2 through 7 in Annex 22, ARETO's prospective financial performance would be unsatisfactory. While the financial rate of return on historically-valued assets would not fall below 14%, internal generation of funds for investment would average a negative 1% over the period and debt service coverage would be inadequate.

6.15 The financial projections also indicate that implementation of the proposed tariff measures would improve ARETO's prospective financial performance considerably. Substantially increased revenues would result in significant, progressive lowering of the operating ratio, considerably increased rates of return on historically-valued assets, rapidly increasing self-financing capability and adequate debt service coverage. The distortion in ARETO's capital structure marked by unusually high levels of indebtedness in either case of course reflects to a large extent the existing Government financing arrangements.

6.16 The problem remains that ARETO's earning capacity is yet unclear. Low unit revenues continue to be somewhat inconsistent with the prevailing tariffs (para. 5.14). Earning capacity in relation to currently-valued assets is not known because revaluation of assets to reflect price changes has not been made. Finally, ARETO's overall financial performance is also clouded by the existing Government/ARETO financial relationship. These issues are being reviewed by Arthur Young & Company, subcontractors of the CTC consultants. In these circumstances, it is difficult to accurately set a rate of return which would provide ARETO with the 13% minimum acceptable self-financing for the program (para. 6.10). Therefore, to achieve this target reliance is being placed on specific tariff actions (para. 5.15) and on ARETO's policy to limit staff growth (para. 5.05). During credit

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1/ On historically-valued net assets.

negotiations ARETO agreed to continuing the undertaking in the first Credit Agreement calling for tariffs which will provide revenues sufficient to cover (a) operating expenses, (b) debt service, (c) adequate working capital and reserves for contingencies, and (d) finance a reasonable portion of the capital expenditures. In addition, ARETO agreed to earn, as a minimum, a rate of return on revalued assets of not less than 11%. For this purpose, ARETO will establish by December 31, 1978, the net current value of its assets at December 31, 1976, and at the same time agree with Government and the Association on principles appropriate to the telecommunications sector to be applied in subsequent periodic revaluations to reflect price changes.

6.17 Indicators that will help monitor ARETO's performance are given in Annex 27.

Fiscal Impact

6.18 ARETO's operations during the 1978-80 project construction period are expected to require a net cash investment from Government of LE94 million, as follows (in LE millions):

	1978	1979	1980	Total 1978-80
Outflow				
Loans	71	65	60	196
Inflows				
Interest	7	11	15	33
Amortization of principal	6	12	17	35
Customs duties	14	9	5	28
Transfers of ARETO's net income	-	1	5	6
	27	33	41	102
Net Outflow	44	32	19	94

Increased earnings from this investment should eliminate net outflows in 1981-82 and produce net inflows thereafter.

Risks and Safeguards

6.19 Despite tariff level increases of 63% and full foreign financing of those goods and services in the program suitable for ICB or for bilateral supplies and regional fund financing, there would be net demands upon Government financial resources averaging US$44 million per year. In view of this, there is a risk that construction might be curtailed or extended in time. However, the high priority accorded by Government to rehabilitation and development of the sector is expected to provide adequate incentive for the timely provision of funds. Moreover, telecommunications projects comprise a large number of technically independent works and delay in completion of some works does not generally prevent utilization of those that are completed. Nevertheless, agreement was reached on giving priority to the civil works for the project (para. 3.07).

6.20 Uncertainties also exist regarding timely implementation of the tariff increases contemplated for 1979 in the financing plan. On the other hand, the gradual approach to such increases with timing acceptable to Government, and the demands of the program upon Government financial resources at a time of economic strain in Egypt, should mitigate this potential problem. At any rate, assurances have been obtained on the timely implementation of the tariff increases (para. 5.15).

7. AGREEMENTS REACHED AND RECOMMENDATIONS

7.01 During credit negotiations, agreement was reached on the following principal points:

(a) ARETO agreed to:

(i) exchange views with IDA on financially significant additions to the program (para. 3.01);

(ii) assign to engineering experts with adequate qualificiations and experience the preparation of tender documents of 30,000 lines electronic exchanges and the supervision of their installation (para. 3.07);

(iii) provide IDA with audited financial statements together with auditors' reports within six months from each fiscal year-end (para. 5.10);

(b) Government agreed to:

(i) give priority to civil works for the project (para. 5.02);

(ii) provide Egyptian suppliers and ARETO, as appropriate, with the foreign currency requirements for the project (para. 6.11);

(iii) provide ARETO with the residual domestic currency financing required for the project (para. 6.12);

(c) Government and ARETO agreed to:

(i) provide IDA with a copy of the final report of the CTC consultants and afford IDA a reasonable opportunity to exchange views on the recommendations (paras. 2.14, 5.03, 5.05, 5.14 and 6.16);

(ii) maintain its present priority of access to telephone connections for large business establishments (para. 4.13);

(iii) settle arrears from Government subscribers as of December 31, 1977, by December 31, 1978, and cause all future charges for services to Government subscribers to be settled within three months from date of billing (para. 5.12);

(iv) implement revenue improvement measures Numbers 4 to 7 in Annex 22, or their equivalent in terms of incremental revenues (para. 5.15); and

(v) set and maintain ARETO's tariffs at levels sufficient to earn at least an 11% return on revalued net assets in operation. (For this purpose, ARETO will establish the net current value of ARETO's assets as at December 31, 1976, and agree on principles to be applied for future periodic revaluations to reflect price changes.) (See para. 6.16.)

7.02 Implementation of revenue improvement measures Numbers 2, 3 and 4 in Annex 22, or their equivalent in terms of incremental revenues of ARETO (para. 5.15) and execution of a subsidiary agreement between Government and ARETO providing for the on-lending of the credit proceeds (para. 6.11) are conditions of effectiveness of the proposed credit.

7.03 The proposed project constitutes a suitable basis for an IDA credit of US$53.0 million equivalent on the usual terms.

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Existing Telecommunications Facilities
(as of December 31, 1976)

	Cairo Zone	Alexandria Zone	Provinces	Total
A. Telephone Exchanges[1/]				
Automatic	16	12	26	54
Manual	66	66	1,724	1,856
Total	82	78	1,750	1,910
Equipped Capacity				
Automatic	203,400	66,070	53,761	323,231
Manual	2,012	5,626	45,227	52,865
Total	205,412	71,696	98,988	376,096
Direct Exchange Lines (DELs)				
Automatic	196,953	62,725	51,760	311,438
Manual	1,373	4,278	35,073	40,724
Total	198,326	67,003	86,833	352,162
Telephones				
Automatic	276,349	73,997	55,445	408,791
Manual	1,400	6,891	42,797	51,088
Total	280,749	80,888	98,242	459,879

B. Long Distance Transmission Systems

1. Coaxial Cable Systems
   a. Cairo-Benha-Tanta-Damanhour-Alexandria
      6 tube standard, capacity 3 x 960 channels
   b. Cairo-Benha-Zagazig-Imailia
      4 tube standard, capacity 2 x 960 channels
   c. Tanta-Mahalla-Mansura
      4 tube standard, capacity 1,920 channels
   d. Beni Suef-Fayoum
      4 tube small, capacity 600 channels
   e. Cairo-El Saff-Beni Suef-El Minya-Assyout-Sohag-Quena-Luxor-Asswan
      (Quena-Asswan section under installation)
   f 4 tube small, capacity 1,920 channels
2. Microwave Systems
   a. Port Said-Mansura, capacity 960 channels
   b. Cairo-Alexandria-Trpoli (Libya)
      Alexandria-Trpoli, capacity 1,260 channels
      Cairo-Alexandria, capacity 2,880 channels (under installation)
3. Open Wire Carrier Systems
   46 systems of 3 and 12 channel capacities

1/ Details of the main automatic exchanges given in Annex 2.

4. Trunk Switching Equipment
   a. 7 automatic trunk exchanges, capacity 4,600 lines
   b. 493, manual trunk boards
5. Long Distance Public Call Offices - 2,402
6. Telex Service
   2 telex exchanges, capacity 1,120 lines
7. International Services
   a. Submarine Cable Systems
      1. Alexandria-Catanzaro (Italy)
         single tube, capacity 480 channels
      2. Alexandria-Beirut (Lebanon)
         single tube, capacity 120 channels
   b. Satellite Communication Systems
      Standard B station, capacity 10 telephone circuits
   c. HF Radio Systems
      3 international circuits
   d. Scatter System
      10 circuits Aswan-Wadi Halfa (Sudan)

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Main Automatic Telephone Exchanges 1976

Area		Exchange	Type	Capacity as of Dec. 31, 1976	Year of Operation	DELs Connected as of June 1976
Cairo						
	1.	Central Cairo (Auto I, II)	Rotary	20,000	1931-1940	15,124
	2.	Gezira	"	10,000	1948-1961	7,781
	3.	Bab-El-Louk	"	14,000	1952-1956	13,553
	4.	Heliopolis	"	29,000	1934-1963	26,946
	5.	Giza	"	4,800	1936-1958	4,710
	6.	Maadi	"	4,000	1952-1966	4,014
	7.	Helwan	"	2,000	1952-1955	1,831
	8.	Zamalek	"	20,000	1955-1962	19,763
	9.	Abbasia	X-Bar 2/	20,000	1962-1964	19,769
	10.	Opera	"	35,000	1963-1965	34,422
	11.	Roda	"	20,000	1965-1969	19,271
	12.	Shoubra	"	12,000	1965-1969	11,930
	13.	Calyub	"	800	1965	682
	14.	Barrage	"	800	1965	662
	15.	Pyramid	"	6,000	1967	5,898
	16.	Dokki	"	5,000	1976	
		Total		203,400		186,356
Alexandria		(City)				
	17.	Central	Rotary	20,000	1935-1952	18,508
	18.	Ibrahimia	"	10,000	1949-1962	9,794
	19.	Gleem	"	10,000	1949-1962	9,684
	20.	Manshia	"	10,000	1969-1973	9,519
	21.	Sidi Gaber	"	11,000	1965-1973	10,939
		Total City		61,000		58,444
Alexandria Region						
	22.	Damanhur	X-Bar	3,000	1962	2,722
	23.	Kafre Dawar	"	800	1/	1/
	24.	Agami	"	400	1/	1/
	25.	Abo Qir	"	200	1/	1/
	26.	Max	"	70	1/	1/
	27.	Honovil	"	200	1/	1/
	28.	Matruh	"	400	1/	1/
	29.	Sub-total Region		5,070	1/	1/
		Alexandria Sub-total		66,070		

1/ Data on year of operation and DELs not available.

2/ X-Bar refers to Cross Bar type of switching equipment.

Area	Exchange	Type	Capacity as of Dec. 31, 1976	Year of Operation	DELs Connected As of June 1976
Lower Egypt Region					
29.	Tanta	X-Bar 2/	6,000	1962	5,980
30.	Mehalla Al Kubra	"	3,000		
31.	Kafrel Zayat	"	1,000		
32.	Kafrel Sheikh	"	1,200	1965	1,198
33.	Disug	"	1,200	1965	1,199
34.	Mansura	"	6,000	1962	5,967
35.	Damietta	S/S(ATE) 3/	2,000	1953-1963	1,991
36.	Rasel Bar	S/S(ATE)	800	1964	674
37.	Shibin-El-Kom	"	1,100	1953	1,090
38.	Benha	X-Bar	2,000	1964	1,929
39.	Zagazig	S/S(ATE)	2,400	1952	2,395
40.	Fagus	X-Bar	1,000	1/	1/
41.	Arsjas		70	1/	1/
42.	Mit Ghamr	X.Bar	2,000	1968	1,972
43.	Sub-total		29,770		
Upper Egypt Region					
43.	Assyut	X-Bar	4,000	1964	3,955
44.	Sohag	"	1,600	1966	1,597
45.	Qena	"	800	1967	787
46.	Luxor	"	600	1965	599
47.	Aswan	"	1,800	1965	1,712
48.	Malawi	"	1,000	1967	953
49.	Fayum	"	2,000	1966	1,984
50.	Beni Suef	"	1,600	1965	1,583
51.	Minya	"	3,000	1964	2,443
	Sub-total		16,400		15,613

1/ Data on year of operation and DELs not available.

2/ X-Bar refers to Cross Bar type of switching equipment.

3/ S/S(ATE) refers to step by step switching equipment of Automatic Telephone Electric Co.

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

International Telephone Statistics

Country	Population 1974 (000's)	GNP - 1974 Per capita US$	GNP - 1974 Growth Rate 1965-74	Telephones - January 1976 National Total (000's)	National Telephone Density 1/	National Av. annual growth rate 1966-76	National % Automatic	Cities 2/ Telephones (000's)	Cities 2/ Telephone Density 1/	Rest of Country Telephones (000's)	Rest of Country Telephone Density 1/	Percentage of National Cities 2/ Population	Cities 2/ Telephones	Rest of Country Population	Rest of Country Telephones
AFRICA															
Algeria	15,215	730	4.5	250	1.46	6.0	81.6	148	8.25	102	0.06	1.1	59.2	98.9	40.8
Egypt	36,360	280	1.0	502	1.34	3.4	88.4	372	4.67	130	0.44	21.4	74.1	78.6	25.9
Ethiopia	27,240	100	1.5	69	0.25	10.8	88.5	44	3.55	25	0.10	14.5	63.7	95.5	36.3
Mauritius	871	580	1.9	25	2.87	6.2	79.3	10	7.02	15	2.08	16.0	39.2	84.0	60.8
Morocco	16,291	430	2.8	199	1.15	5.3	83.6	84	3.63	115	0.77	13.3	42.1	86.7	57.9
Nigeria 3/	73,044	286	6.0	111	0.16	6.3	83.4	47	7.12	64	0.09	0.9	42.3	91.1	57.7
Rhodesia	6,100	520	3.5	183	2.84	6.1	93.4	134	14.69	49	0.35	14.1	73.1	85.9	26.9
South Africa	24,940	1,210	2.5	2,072	8.10	5.6	84.4	1,507	25.47	565	2.88	23.1	72.7	76.9	27.3
Sudan 3/	15,227	230	4.3	58	0.31	4.7	91.4	37	4.67	19	0.11	4.3	65.2	95.7	34.8
Tunisia	5,460	650	5.4	127	2.26	13.7	92.9	40	4.36	87	1.85	16.3	31.4	83.7	68.6
Zambia	4,781	520	1.0	77	1.69	8.4	98.2	17	4.32	60	1.44	8.8	22.4	91.2	77.6
AMERICAS															
Argentina	24,646	1,520	2.9	2,469	9.66	5.1	86.0	NA	NA	NA	NA	NA	NA	NA	NA
Brazil	103,981	920	6.3	3,371	3.08	9.8	97.0	1,759	11.51	1,612	1.71	14.0	52.2	86.0	47.8
Canada	22,480	6,190	3.5	13,142	57.15	5.8	99.9	6,262	71.07	6,880	48.50	38.3	47.7	61.7	52.3
Mexico	57,889	1,090	2.8	2,915	4.76	13.5	95.8	1,743	12.53	1,172	2.48	22.7	59.8	77.3	40.2
USA	211,890	6,670	2.4	149,001	69.49	4.8	99.9	33,688	77.67	115,323	67.42	20.2	22.6	79.8	77.4
ASIA															
Bangladesh	71,479	100	(-)1.9	66	0.09	NA	81.7	44	1.68	22	0.03	3.6	66.6	96.4	33.4
China, Rep. of	15,710	810	6.9	1,118	6.92	20.9	93.7	670	14.87	448	3.85	27.9	59.9	72.1	40.1
India	595,586	140	1.3	1,817	0.30	7.5	82.2	956	2.68	861	0.15	5.9	52.6	94.1	47.4
Indonesia	128,400	170	4.1	305	0.23	3.6	68.8	156	1.53	149	0.12	7.7	51.2	92.3	48.8
Iran	33,100	1,250	7.7	688	2.00	12.4	92.5	477	6.27	211	0.79	22.1	69.3	77.9	30.7
Iraq	10,770	1,110	4.8	185	1.69	7.8	94.7	126	2.87	59	0.93	40.9	68.1	59.1	31.9
Israel	3,359	3,460	5.8	796	22.80	12.1	100.0	578	33.85	218	12.23	48.9	72.6	51.1	27.4
Japan	109,670	4,070	8.5	45,515	40.47	12.5	98.4	20,676	49.18	24,839	35.27	37.4	45.4	62.6	54.6
Pakistan	67,213	130	2.5	240	0.33	5.7	85.1	151	2.03	89	0.14	10.3	63.0	89.7	37.0
Philippines	41,433	330	2.7	490	1.17	11.5	95.5	381	14.81	109	0.28	6.1	77.8	93.4	22.2
Singapore	2,219	2,240	10.0	318	14.04	13.8	100.0	318	14.04	-	-	100.0	100.0	-	-
Sri Lanka	13,393	130	2.0	72	0.53	5.3	99.7	22	3.68	50	0.38	4.9	31.0	95.5	69.0
Syria	7,177	560	4.2	171	2.30	7.9	89.7	140	5.42	31	0.71	43.5	81.9	56.5	18.1
Thailand	40,780	310	4.3	312	0.74	15.0	99.4	249	4.60	63	0.17	12.8	79.8	87.2	20.2
EUROPE															
France	52,510	5,440	4.8	13,833	26.20	8.5	96.5	5,471	50.23	8,362	19.95	20.6	39.5	79.4	60.5
Germany,Fed.Rep.of	62,040	6,260	3.9	19,603	31.70	8.3	100.0	8,012	47.29	11,591	25.82	27.4	40.9	72.6	59.1
Turkey	39,167	750	4.3	1,012	2.52	6.5	79.5	690	8.98	322	1.02	19.6	68.2	80.4	31.8
Sweden	8,160	7,240	2.8	5,423	66.07	4.3	100.0	1,291	95.30	4,132	60.29	16.5	23.8	83.5	76.2
Switzerland	6,440	7,870	2.9	3,913	61.09	5.7	100.0	1,316	87.75	2,597	52.92	23.4	33.6	76.6	66.4
UK	55,970	3,590	2.2	21,036	37.51	7.0	99.9	6,959	49.49	14,077	33.50	25.1	33.4	74.9	66.9
USSR	252,060	2,380	3.4	16,129	6.63	7.4	100.0	4,475	18.25	11,654	5.33	10.1	27.7	89.9	72.3
OCEANIA															
Australia	13,340	5,330	3.4	5,267	39.01	6.5	96.3	3,669	44.62	1,598	30.28	60.9	69.7	39.1	30.3
New Zealand	3,030	4,310	1.8	1,571	50.18	4.4	93.9	790	57.88	781	44.23	43.6	50.3	56.4	49.7

1/ Telephone Density: Number of telephones per 100 population (based on AT&T statistics).

2/ These statistics relate to cities with more than 10,000 telephones except for countries in Europe and Americas. For the USA, statistics are for cities with more than 500,000 telephones and for Europe and the rest of North and South Americas for cities with more than 100,000 telephones.

3/ Telephone statistics for these countries are for 1975.

Notes: NA = not available.

Grouping of countries in threes for added ease in reading table only.

Sources: Telephone statistics: "The World's Telephones," 1976, AT&T.

Population and GNP statistics: "World Bank Atlas," 1976.

August 30, 1977

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Growth of Local Telephone System - 1960-82

	December 31 of Year	Exchange Equipped Capacity	Direct Exchange Lines (DELs)	Telephones	Increase Over Previous Year (%) Capacity	D.E.L.s	Telephones	Telephone Density 1/	Exchange Fill (%) 2/	Ratio Telephones to DELs	Registered Waiting List	Total Demand 3/	Increase in Demand Over Previous Year (%)	Telephone Availability 4/
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	1960	170,630	144,661	203,105	-	-	-	0.78	84.8	1.40	N. A. 5/	N. A. 5/	N. A. 5/	N. A. 5/
	1961	173,880	151,021	213,024	1.9	4.4	4.7	0.80	86.8	1.41	"	"	"	"
	1962	187,840	161,480	227,916	8.0	6.9	7.0	0.84	86.6	1.41	"	"	"	"
	1963	219,780	179,535	248,790	1.0	11.2	9.2	0.89	81.7	1.39	"	"	"	"
	1964	249,650	194,969	277,479	13.6	8.6	11.5	0.97	78.1	1.42	"	"	"	"
	1965	270,640	228,579	321,299	8.4	17.2	15.7	1.08	84.5	1.41	"	"	"	"
	1966	297,130	231,749	345,820	9.8	1.4	7.6	1.15	78.0	1.49	"	"	"	"
	1967	307,160	255,712	360,344	3.4	10.4	4.2	1.17	83.3	1.41	"	"	"	"
	1968	314,300	261,628	368,045	2.3	2.3	6.4	1.16	83.2	1.41	15,500	277,128	"	96.9
	1969	330,600	270,254	379,466	5.2	3.3	3.1	1.17	81.8	1.40	45,500	315,754	13.9	85.6
	1970	342,400	287,765	404,302	3.6	6.5	6.6	1.21	84.0	1.41	66,500	354,265	12.2	81.2
	1971	347,400	305.000	439,692	1.3	6.0	8.8	1.29	87.9	1.44	95,500	400,500	13.1	76.2
	1972	353,300	319,572	451,380	1.8	4.8	2.7	1.30	90.5	1.41	135,376	454,948	13.6	70.2
	1973	368,463	327,251	465,064	4.3	2.4	1.0	1.31	88.8	1.42	171,200	498,541	9.6	65.6
	1974	369,525	338,024	479,994	3.0	3.3	1.0	1.32	91.5	1.44	201,680	539,704	8.3	62.6
	1975	373,159	345,266	497,183	1.0	2.1	1.0	1.36	92.5	1.44	231,108	576,374	6.8	59.9
Actual	1976	376,096	352,162	507,113	0.8	2.0	2.0	1.39	93.6	1.44	268,045	620,207	7.6	56.8
Forecast	1977	403,696	366,692	528,036	7.3	4.1	4.1	1.45	90.8	1.44	302,861	669,823	8.0	53.7
	1978	434,896	391,962	560,506	7.7	7.7	6.2	1.55	90.1	1.43	331,446	723,408	8.0	52.2
	1979	488,505	429,962	614,846	12.3	9.7	9.7	1.68	88.0	1.43	351,318	781,280	8.0	55.0
	1980	569,805	484,962	693,496	16.6	12.8	12.8	1.85	85.0	1.43	358,820	843,782	8.0	57.5
	1981	649,405	544,962	762,947	13.9	12.3	10.0	2.07	83.9	1.40	366,322	911,284	8.0	59.8
	1982	741,405	610,962	855,347	14.1	12.1	12.1	2.28	82.4	1.40	373,224	984,186	8.0	67.0

NOTE: Figures for years up to 1976 are actuals. Figures for years 1977 to 1982 are forecasts.

1/ Telephone Density: Telephones (Col. 4) per 100 population (at 1974 levels beyond 1974).

2/ Exchange Fill: DELs (Col. 3) ÷ capacity (Col. 2) x 100.

3/ Total Demand: DELs (Col. 3) + waiting list (Col. 11).

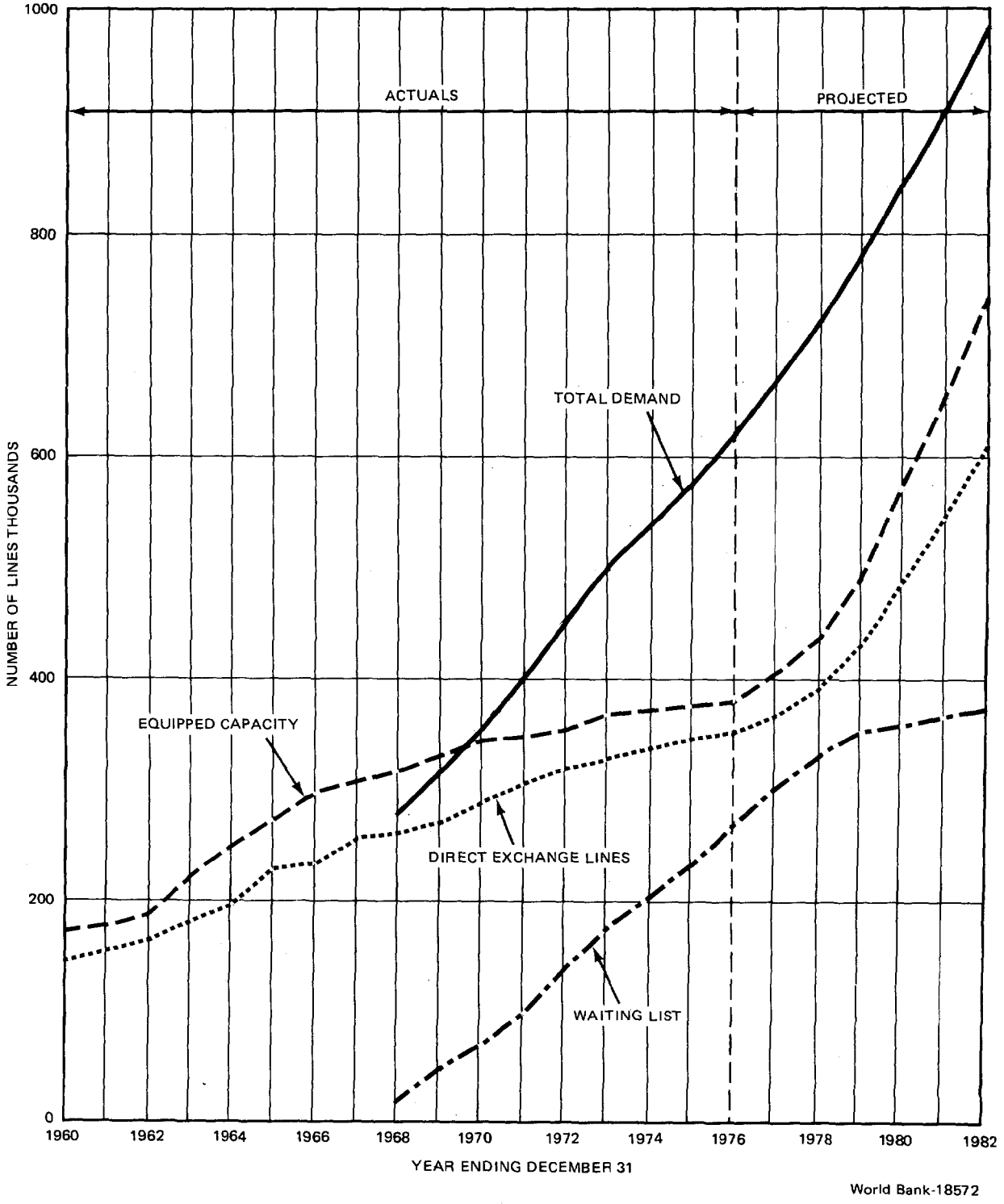
4/ Telephone Availability: DELs (Col. 3) ÷ total demand (Col. 12) x 100.

5/ N. A.: Not available.

ANNEX 4

January 20, 1978

EGYPT
ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)
GROWTH OF LOCAL TELEPHONE SYSTEM



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EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Summary of Scope of Work of CTC Consultants

A. 1. Investigate and review the existing ARE telecommunications system, its networks and linkage, their extent, operating characteristics and management aspects, review proposed ARETO and TRC research studies, all existing network studies and plans of improvement projects underway or scheduled for implementation in the ARE as a whole, and in Cairo as the capital city. System integration with the Pan-African Telecommunications Network should be considered.

2. Investigate and review the performance and condition of the existing telecommunications networks in the ARE as a whole and in Cairo as the capital city, including such aspects as traffic loads, quality of service, customer backlogs, condition and maintenance of equipment, rate structure, commercial and accounting practices, financial position, and system constraints. Specifically consultants will review (a) the organization of ARETO, its management and staff, its relations with other organizations such as TRC, and its relationship with the Ministry of Finance and other Governmental agencies, (b) existing staff levels and needs, and prepare an organizational and manpower program and identify training needs, and (c) the accounting system and procedures used by ARETO to control financial operations, including a review of capital and fixed assets, rate structure financial position, procurement and inventory control.

3. Investigate and perform measurements to assess the propagation characteristics in ARE in the frequency band 1-30 GHZ.

B. 1. Investigate and analyze the general economic demographic and social factors, including rate of economic development, urbanization and industrialization, affecting the magnitude growth rate of market demands for telecommunications services and resultant traffic; prepare projections of market demands and traffic forecasts for the next 5-year and 15-year periods.

2. Investigate and analyze those economic and technical factors and considerations having an impact on schemes and strategies for system development, such as rate structure, international rate-sharing arrangements, customer priorities, subscriber regulations, types and levels of service, which are amenable to Governmental decision and control; recommend the most appropriate least-cost strategy.

3. Prepare a comprehensive telecommunications system master plan for the phased development of national and international services, including telephone, telegraph, telex and other appropriate special services, such as facsmile, data transmission leased lines, and ship-shore maritime radio communications, all consistent with projected market and traffic forecasts.

C. Prepare a "quick-fix" remedial actions program to improve the existing Cairo telecommunications network facilities in the light of modern technologies and consistent with the master plan described in B above.

D. Prepare and submit reports as follows:

1. The consultant shall submit a monthly letter report. In addition, at the end of every three months, the consultant and principals from ARETO and TRC shall meet for a comprehensive, detailed review of study status, progress and future performance.

2. At the end of approximately nine months of fieldwork, principals from ARETO and TRC and AID will meet with the consultant and undertake a detailed review of the status of the work. It is anticipated that at that stage of the work program, the consultant will be in a position to provide a rough draft of conclusions and findings and the basis for such conclusions.

3. The consultant shall prepare and issue a final report of the Telecommunications Sector Study which will include all pertinent data, analyses, findings and recommendations as described above. This report shall be submitted within 12 months after the effective date of the contract (by May 1978).

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Description of Works in ARETO's Program 1978-80

ARETO's 1978-80 program has the following components:

(a) the ongoing works carried over from the 1975-77 period including the project financed under Credit 548-EGT;

(b) new works to be undertaken under the proposed second telecommunications project; and

(c) other new works in the program of ARETO.

A brief description of the major works in the program follows:

a) Ongoing works

1. Local telephone exchanges - ARETO is installing about 68,000 lines of LME crossbar type automatic exchange equipment in Cairo out of which 11,800 lines are for replacement of existing old and obsolete equipment, 29,000 for expansion of existing exchanges, and 27,200 for new exchanges. The Alexandria system is being extended by a new installation of 6,000 lines. The lower Egypt exchanges are being expanded by 400 lines and upper Egypt by 800 lines. In the Suez Canal area 21,000 lines are contracted for and 18,000 of these are to be installed and 3,000 lines in reserve installation. The total installation for Egypt in the ongoing program is about 97,200 lines. The program of installation and details are given in the table at Annex 8. The 21,000 lines of equipment for the Canal area is Hitachi crossbar equipment imported from Japan under Saudi Fund loan. The rest of the equipment has been contracted with the Egyptian Telephone Company supplemented by direct imports from L. M. Ericsson of Sweden of power plant and other specialized equipment which the domestic factory does not produce.

2. Junction and local cable network expansion - To complement the exchange expansions in item 1 above, and to meet the demand for telephone connections, adequate expansion to the outside plant network comprising the junction and local cable networks and subscribers installations is in hand. A major part of the requirement for cables for expansion along with accessories and cable laying equipment has been provided under the first IDA Credit 548-EGT. In addition, ARETO has entered into a contract with AEG - TELEFUNKEN of Germany for a turnkey contract for the replanning and renewal of the outside plant network in the Ramses area of Cairo. This work has been financed by an export credit with a HERMES insurance cover. Work commenced in May 1977 and is expected to be completed by mid-1979.

3. Expansion of telex exchanges - The Cairo and Alexandria telex exchanges of LME crossbar are being expanded by 800 and 400 lines respectively during 1978. In addition for the Suez Canal area, contracts have been made with LME for installation of 640 lines in the area; these are expected to be installed in 1979. The details of the installation program for telex exchanges is given in Annex 9. These works are financed under LME supplier's credit.

4. Expansion of automatic trunk exchanges - The ongoing program of expansion of the L. M. Ericssons crossbar trunk exchanges will be completed at the beginning of 1978 with expansion of the Cairo exchange by 1,800 lines and Alexandria by 800 lines. The first stage of the LME ARE type international trunk exchange with 160 lines is expected also to be completed by the beginning of 1978 with further extension by 220 lines to 380 lines by the beginning of 1979. The equipment has been financed under LME supplier's credit. A contract for the installation of trunk exchanges in the Canal area with 1,600 lines has been entered into with Hitachi Japan along with the local exchanges in this area financed by Saudi Fund. These exchanges are expected to be completed by 1979. The details and program of installation of the trunk exchanges is given in Annex 10.

5. Coaxial cables Cairo-Aswan and Cairo-Fayoum - A 4-tube small diameter coaxial cable is under installation in upper Egypt between Cairo and Aswan. The section Cairo to Sohag has been commissioned and it is expected that the entire route will be completed by the end of 1978. A 2-tube small diameter coaxial cable also under installation between Cairo and Fayoum is also expected to be completed at about the same time. These works have been financed by an LME supplier's credit. The routes of the cables are indicated in Map IBRD 11323R1.

6. Coaxial cables Cairo-Suez and Suez-Ismailia-Port Said and Alexandria-Sallom - ARETO has entered, in early 1977, into contracts with Standard Telephones and Cables, STC (UK) for a 4-tube small diameter coaxial cable system between Cairo-Suez and Suez-Ismailia-Port Said and Alexandria-Sallom. All these systems are expected to be completed by mid-1979. The financing of these has been secured from the Saudi Fund. The routes are indicated in Map IBRD 11323R1.

7. Microwave system Cairo-Libya - A 960-channel 6 GHZ microwave system to link Egypt and Libya and to other Arab states on the North Africa coast is under installation. Most of the equipment which is supplied by Nippon Electric Company of Japan has been received and the delay in installation is mainly due to the civil works at the various sites on the route between Cairo-Alexandria-Libyan border. ARETO expects to complete the installation by mid-1978. The Government of Libya has financed the equipment under a loan with special arrangements for repayment out of revenues from the system when operational. The route of the system is indicated in Map IBRD 11323R1.

8. Standard earth station in Cairo - ARETO contracted with the Nippon Electric Company of Japan in April 1975 for the installation of a standard earth station in Maadi near Cairo with a 105-feet diameter antenna for the Atlantic Ocean satellite with equipment for initial operation of 72 channels. The equipment has been delivered and the delay is in the civil works of buildings and antenna foundations at Maadi. Special efforts are underway to complete the civil works and installation with a view to commissioning the station by April 1978.

b) Works in IDA second project

1. Local telephone exchanges - The installation of about 220,400 lines of local automatic telephone exchange equipment is provided for in the project out of which about 102,400 lines are in Cairo, 78,000 lines in other principal cities and 25,000 in small towns in Egypt and 15,000 lines in suburban Cairo. About 36,000 lines are to replace old and obsolete equipment. The extensions to existing exchanges of about 138,600 lines will be procured from the domestic telephone factory supplemented by direct imports from L. M. Ericsson of Sweden if power plant and other specialized equipment which the factory does not produce. 20,000 lines for Ramses III exchange has been contracted for direct import and installation from L. M. Ericsson. The proposed IDA credit would finance the new electronic exchanges, 30,000 lines (Maadi 10,000 and Kubba 20,000) and 30,800 lines of electro-mechanical exchanges at other locations. The 15,000 lines suburban exchanges at Cairo have been financed by a French credit. The program of installation of the main automatic exchanges is given in Annex 8. In addition to these, about 6,000 lines of manual exchange equipment will be installed, mostly in the rural areas.

2. Installation of 35,000 lines of PABXs - The installation of 35,000 lines of PABXs of various sizes is provided for in the project. Out of this, about 20,000 lines are being financed by a French credit and 15,000 will be provided by the second IDA credit.

3. Junction and local cable network expansion - To complement the exchange expansion in Item 1 above and to meet the demand for telephone connections, adequate expansion of the outside plant network comprising the local and junction cable networks and subscribers' installations is planned. ARETO will need cables and accessories in addition to the available stock to meet these needs. These requirements will be met from the proposed second IDA credit.

4. PCM microwave Cairo junction network - In order to relieve the congestion in the urban exchange junction cable network and with a view to permit rehabilitation and reinforcement of the network, ARETO had prepared a scheme for the installation of a PCM microwave junction network in Cairo. The existing underground cable network in most parts is more than 30 years old and the microwave solution was considered as the most feasible under the circumstances for a quick remedy. A contract has been entered into by ARETO with Raytheon Company of USA for the supply of the system and this is being financed by the USAID. The work is expected to be completed by end of 1978.

5. Telex exchange and teleprinters - To meet the increasing demand for telex connections in Cairo, ARETO has proposed the installation of a 3,000 line electronic telex exchange in Cairo. It is proposed to procure about 2,000 teleprinters to provide the subscriber facilities. The proposed second IDA credit will finance these procurements.

6. Expansion of automatic trunk exchanges - The capacity of existing trunk exchanges will be expanded from existing 7,200 lines by 1,600 lines in the Suez Canal area to 8,800 lines by 1979. A further extension of the trunk exchanges along with installation of new trunk exchanges with a total capacity of 5,000 lines is provided for in the project. This will increase the capacity to 13,800 lines by 1980. The details are at Annex 10. The 5,000 lines expansion is expected to be financed by a L. M. Ericsson supplier's credit.

c) Other new works in ARETO's 1978-80 program

1. Installation of new telephone exchanges in Cairo - ARETO proposes to install about 41,000 lines of new exchange equipment Cairo for the Imbaba, Babal Khalq and Shubra Al Kheima areas. These proposals are in the preliminary stages and these will be undertaken after further studies and when financing could be arranged for.

2. Computer controlled message center Cairo - ARETO proposes the installation of a computer controlled message center to deal with all public telegraph messages originating, transiting and terminating at Cairo. This will also be integrated with the international public message switching center which was proposed originally as a separate item. These proposals are in the preliminary stages and ARETO has accepted the need for studies before undertaking this scheme.

3. Coaxial cable system Damiette-Rashid - ARETO proposes the installation of a 4-tube small diameter cable from Damiette-Rashid along the Mediterranean Coast. The justification for this based on traffic needs and least cost solution needs to be studied before undertaking this scheme.

4. Coaxial cable Cairo-Alexandria-Tartous (Syria) - This coaxial cable system with 6-tube small diameter is proposed to link Cairo with Alexandria following a different route to the existing system, thereby connecting new centers such as Shibinel Kom, Kafrelsheikh, Dessouk, etc. From Alexandria a 480-channel submarine cable is proposed to link with Tartous (Syria). The feasibility study has been financed by the Arab Fund and expected to be available by October 1977. Eventually, Arab Fund financing for the system is expected.

5. Coaxial cable Qena-Safgi-Dheba (Saudi Arabia) - This is a proposed land coaxial cable system to connect Qena to Safgi in Egypt with a submarine cable system of 480-channel capacity between Safgi and Dheba in Saudi Arabia. The technical feasibility and possible timing for execution of this link is under study and Saudi Arabia is likely to finance this when its definite implementation is decided upon.

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Main Automatic Telephone Exchange Installation Program, 1977-81

Location	Total Installations	Extensions to existing exchanges	New installations	Replacements	Remarks
- - - - - - - - - - - - - - - - -1977 - - - - - - - - - - - - - - - - -					
CAIRO					Replaces 7,000 lines
Almaza	10,000*		3,000	7,000	Helliopolis
Ramses I	10,000*			10,000	Replaces auto 1
Nasr I	10,000*		10,000		Central Cairo
Shoubra I	6,000*		6,000		
Subtotal	36,000*		19,000	17,000	
ALEXANDRIA					
Sidi Beshr	6,000*		6,000		
UPPER EGYPT					
Gerga	600*		600		Replaces manual exchange
EGYPT GRAND TOTAL	42,600		25,600	17,000	
- - - - - - - - - - - - - - - - -1978 - - - - - - - - - - - - - - - - -					
CAIRO					
Ramses II	10,000		10,000		
Ramses III and IV	20,000			20,000	Replaces auto II & III
Subtotal	30,000		10,000	20,000	
ALEXANDRIA					
Sidi Beshr II	4,000		4,000		
Sidi Gaber	9,000	9,000			
Subtotal	13,000	9,000	4,000		
LOWER EGYPT					
Kafr El Sheikh	200*	200			
Dessouk	200*	200			
Subtotal	400	400			
UPPER EGYPT					
Sohag	200*	200			
Qena	200*	200			
Luxor	200*	200			
Aswan	200*	200			
Subtotal	800	800			
EGYPT GRAND TOTAL	44,200	10,200	14,000	20,000	
- - - - - - - - - - - - - - - - -1979 - - - - - - - - - - - - - - - - -					
CAIRO					
Dokky I	5,000*	5,000			
Dokky II	10,000*	10,000			
Giza I	6,000*		1,200	4,800	Replaces 4,800
Opera IV	5,000	5,000			lines existing
Shoubra II	4,000*	4,000			
Subtotal	30,000	24,000	1,200	4,800	
SUEZ CANAL					Replaces -
Port Said	10,000*		5,000	5,000	-existing 5,000 lines
Suez	4,000*		2,000	2,000	-existing 2,000 lines
Ismailia	4,000*		3,409	591	-existing 591 lines
Subtotal	18,000		10,409	7,591	
EGYPT GRAND TOTAL	48,000	24,000	11,609	12,391	

* Ongoing project items and the rest are proposed project items.

Location	Total installations	Extensions to existing exchanges	New installations	Replacements	Remarks
		-1980-			
CAIRO					
Almaza II*	10,000	10,000			
Helwan	5,000*		3,000	2,000	
Tebine I	2,000*		2,000		
Tebine II	1,000			1,000	Replaces existing 100,000 lines
Guiza II	4,000	4,000			
Nasr II	10,000	10,000			
Subtotal	32,000	24,000	5,000	3,000	
ALEXANDRIA					
Menshia	10,000		10,000		
LOWER EGYPT					
Badrashein	1,000		1,000		
Tala	1,000		1,000		
Toukh	1,000		1,000		
Menouf	2,000		2,000		
Damietta	4 000		2,000	2,000	
Ras El Barr	2,000		1,000	1,000	
Shibinelkom	5,000		4,100	900	
Zagazig	5,000		3,000	2,000	
Subtotal	21,000		15,000	5,900	
UPPER EGYPT					
Sohag	1,500	1,500			
Fayoum	1,000	1,000			
Beni Soueff	1,500	1,500			
Subtotal	4,000	4,000			
EGYPT GRAND TOTAL	67,000	28,000	30,000	8,900	
		-1981-			
CAIRO					
Helwan II	3,000		3,000		
Maadi	10,000		6,000	4,000	
Kubba	20,000		20,000		
Shoubra al Kheima	1,000		1,000		
Abbasia	10,000	10,000			
Kalyub	1,200	1,200			
Barrage	1,200	1,200			
Pyramid	4,000	4,000			
Subtotal	50,400	16,400	30,000	4,000	
ALEXANDRIA					
Mersa	1,600	1,600			
Subtotal	1,600	1,600			
LOWER EGYPT					
Mansoura	4,000	4,000			
Tanta	4,000	4,000			
Benha	2,000	2,000			
Mehalla	2,000	2,000			
Kafrel Zayat	2,000	2,000			
Dessouk	1,800	1,800			
Fagous	3,000	3,000			
Mit Ghamr	3,000	3,000			
Subtotal	21,800	21,800			

* Ongoing project items.

Location	Total installations	Extensions to existing exchanges	New installations	Replacements	Remarks
		-1980-			
UPPER EGYPT					
Assyut	4,000	4,000			
Luxor	1,400	1,400			
Aswan	1,200	1,200			
Qena	1,200	1,200			
Minia	2,000	2,000			
Subtotal	9,800	9,800			
EGYPT GRAND TOTAL	83,600	49,600	30,000	4,000	

SUMMARY

Year	Total Installations	Extensions to existing exchanges	New installations	Replacements
1977	42,600		25,600	17,000
1978	44,200	10,200	14,000	20,000
1979	48,000	24,000	11,609	12,391
1980	67,000	28,000	30,100	8,900
1977-80 TOTAL	201,800	62,200	81,309	58,291
1981	83,600	49,600	30,000	4,000
1977-81 TOTAL	285,400	111,800	111,309	62,291

January 24, 1978

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Telex Exchange Installation Program (1976-80)

Location 1/	Existing in 1976	Additions during 1977	1978	1979	1980	Capacity at end 1980
Cairo	800	400	800	-	3,000 2/	5,000
Alexandria	320	100	380	-	-	800
Port Said	-	-	320	-	-	320
Ismailia	-	-	-	160	-	160
Suez	-	-	-	160	-	160
Total	1,120	500	1,500	320	3,000	6,440

1/ Telex subscribers at locations other than indicated such as Luxor, Assyut, Tanta, Mansoura, and Zagazig will be connected to the Cairo exchange by voice frequency telegraph (VFT) circuits.

2/ The 3,000-line extension will be an electronic exchange.

September 16, 1977

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Automatic Trunk Exchange Installation Program (1977-1980)

	Location	Capacity as of December 1976	Additions during 1977	Additions during 1979	Total Capacity end of 1980
1.	Cairo	1,400	1,800*	600	3,800
2.	Alexandria	1,000	800*	200	2,000
3.	Benha	200		400	600
4.	Damanhour	200		400	600
5.	Mansura	600		400	1,000
6.	Mehalla	200		400	600
7.	Tanta	1,000			1,000
8.	Port Said			400*	400
9.	Ismailia			800*	800
10.	Suez			400*	400
11.	Assyut			600	600
12.	Minya			400	400
13.	Sohag			400	400
14.	Aswan			200	200
15.	Beni Soueff			400	400
16.	Quena			200	200
17.	Fayoum			400	400
	TOTAL	4,600	2,600	6,600	13,800

* Ongoing project items and rest are proposed project items.

August 18, 1977

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Telecommunications Investment Program - 1978-80
(in Egyptian Pounds LE Millions)

	1978			1979			1980			1978-80 Period		
	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total
Ongoing Program (including IDA First Project)	27,223	23,139	50,362	16,266	13,370	29,636	4,851	2,120	6,971	48,340	38,629	86,969
IDA Second Project	17,274	21,375	38,649	22,509	39,116	61,625	17,617	29,109	46,726	57,400	89,600	147,000
Other Works in ARETO's New Program	12,377	674	13,051	19,775	3,480	23,255	29,123	16,483	45,606	61,275	20,637	81,912
Total New Program (including IDA Second Project)	29,651	22,049	51,700	42,284	42,596	84,880	46,740	45,592	92,332	118,675	110,237	228,912
Total Program	56,874	45,188	102,062	58,550	55,966	114,516	51,591	47,712	99,303	167,015	148,866	315,881

January 20, 1978

ANNEX 11

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATION ORGANIZATION (ARETO)

Project Construction Costs[1]/
(LE thousands)

Items	1978			1979			1980			Total 1978-80		
	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total
Telephone exchange equipment	10,643	11,379	22,022	7,757	16,175	23,932	5,832	10,252	16,084	24,232	37,806	,62,038
Subscriber equipment (including PABXs)	2,150	1,750	3,900	2,250	2,700	4,950	1,800	1,560	3,360	6,200	6,010	12,210
Cairo city junction microwave	1,400	4,200	5,600	1,400	3,500	4,900	-	-	-	2,800	7,700	10,500
Cables and accessories	400	400	800	5,300	5,850	11,150	4,450	6,040	10,490	10,150	12,290	22,440
Buildings for telecommunications equipment	1,420	80	1,500	1,920	80	2,000	420	80	500	3,760	240	4,000
Long distance network (including trunk exchanges	100	1,770	1,870	100	4,200	4,300	-	4,000	4,000	200	9,970	10,170
Telegraphs and telex	-	-	-	1,000	2,700	3,700	1,700	3,250	4,950	2,700	5,950	8,650
Contingencies	1,161	1,796	2,957	2,782	3,911	6,693	3,415	3,927	7,342	7,358	9,634	16,992
Total Cost	17,274	21,375	38,649	22,509	39,116	61,625	17,617	29,109	46,726	57,400	89,600	147,000

1/ Foreign and local costs include supply and installation; local costs also include custom duties payable.

ANNEX 12

January 20, 1978

ANNEX 13

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Contingency Provision in Project Cost Estimates

		Total Project Costs		
		Local	Foreign	Total
		------(LE Million)------		
1.	Base costs 1/	50.04	79.96	130.00
2.	Physical contingency	1.21	1.43	2.64
3.	Subtotal	51.25	81.39	132.64
4.	Price contingency	6.15	8.21	14.36
5.	Total Projects Costs	57.40	89.60	147.00
6.	Physical contingency as percentage of base costs (%)	2.42	1.79	2.03
7.	Price contingency as percentage of base costs plus physical contingency (%)	12.00	10.09	10.82
	Year ending December 31,	1978	1979	1980
8.	Assumption for annual increase in costs 2/			
	(a) for price increase in local costs	10%	10%	10%
	(b) for price increase in foreign costs	7.5%	7.5%	7%

1/ Local and foreign base bosts are primarily based on recent contracts of ARETO.

2/ Annual price increase factor is compiled by comparing the rates of price increase in previous years plus one-half the price increase in the year concerned.

January 16, 1978

ANNEX 14

EGYPT

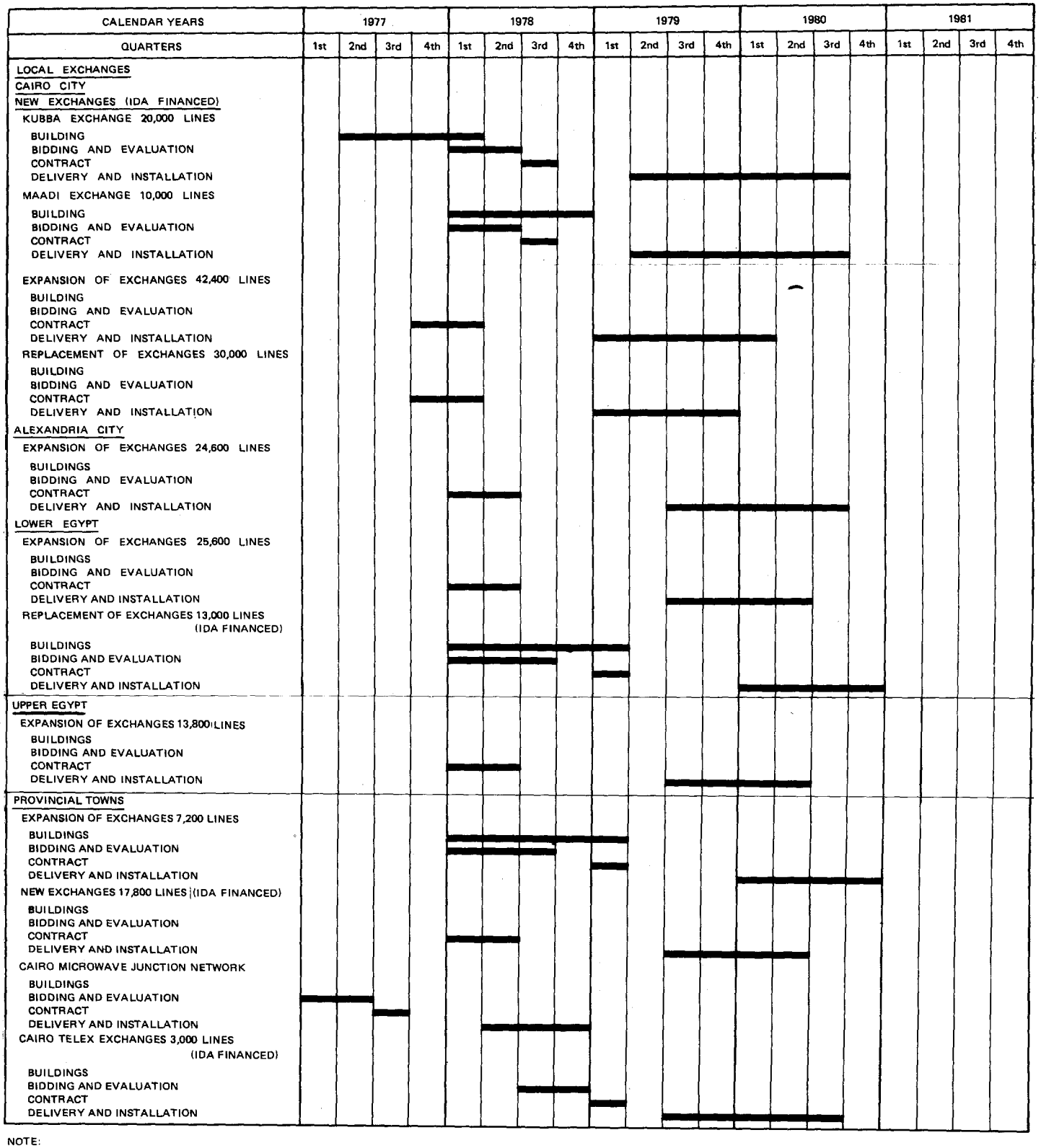
ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Foreign Cost Financing of
Second Telecommunications Project
(in millions)

		£E	US$
	IDA		
1.	Cairo 30,000 lines Kuba/Madi	8.41	12.02
2.	Lower Egypt replacement and expansion 14,000 lines	2.73	3.90
3.	New small exchanges 17,800 lines	3.74	5.34
	Total Telephone Exchange Equipment	14.88	21.26
4.	PABXs - 15,000 lines	2.10	3.00
5.	Telephone cables	7.00	10.01
6.	Cable accessories	1.75	2.50
7.	3,000 lines telex exchange Cairo	2.46	3.51
8.	2,000 teleprinters	3.51	5.01
9.	Unallocated	5.40	7.71
		37.10	53.00
	FRANCE		
10.	PABXs 20,000	3.15	4.50
11.	Suburban exchanges 15,000 lines and links	8.40	12.00
		11.55	16.50
	USAID		
12.	Cairo city PCM network	8.40	12.00
	LME		
13.	Direct import of local exchanges 20,000 lines	3.84	5.48
14.	Direct imports of trunk exchanges	9.80	14.00
15.	Imports from LME for power plant etc. to complete exchange equipment from factory	1.23	1.76
16.	Material and components for telephone factory	10.94	15.63
	- Contingencies	2.54	3.63
		28.35	40.50
	GOVERNMENT		
17.	For building and Damiette Mansura cable	0.70	1.00
18.	For cable factory imports	3.50	5.00
		4.20	6.00
	Total	89.60	128.00

January 20, 1978

EGYPT
ARAB REPUBLIC OF EGYPT TELE COMMUNICATIONS ORGANIZATION (ARETO)
CONSTRUCTION SCHEDULES OF MAJOR WORKS IN PROJECT



NOTE:

1. Construction schedules are not shown for buildings where they are available.
2. Schedules for bidding and evaluation not shown, where contracts are to be placed with domestic telephone factory.

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Estimated Schedule of Disbursements

IDA Fiscal Year and Quarter	Cumulative Disbursements at end of Quarter (US$ thousands)
1978-79	
September 30, 1978	2,500
December 31, 1978	4,300
April 30, 1979	8,000
June 30, 1979	13,000
1979-80	
September 30, 1979	20,000
December 31, 1979	25,700
April 30, 1980	34,000
June 30, 1980	39,000
1980-81	
September 30, 1980	43,000
December 31, 1980	47,700
April 30, 1981	50,000
June 30, 1981	51,500
1981-82	
September 30, 1981	52,500
December 31, 1981	53,000

February 11, 1978

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Return on Investment

1. Benefit period. The benefit period of the program extends from 1977 to 2000, when on average the equipment provided under the program is expected to have substantially completed its useful life.

2. Capital expenditures. Pre-investments for the program of LE 66.78 million in 1973-77 are included. All price contingencies for 1978-80 have been deducted from the estimated annual total capital expenditures for the program.

3. Operating costs and revenues for 1978-80 have been deflated with expected local price increases of 10 percent per annum to bring them to the 1977 price level and make them comparable with capital expenditures. As from 1980, incremental operating costs and revenues are assumed to remain constant in real terms. Incremental revenues assigned to the program are primarily based on expected additional telephone and telex subscribers and traffic brought about by the program. Incremental operational costs exclude depreciation and interest and are based on the additional assets and traffic expected from the program.

4. Net benefits. A summary of the program's cost and benefit streams at 1977 price levels and assuming continuation of existing tariffs is as follows (in LE millions):

Year	Capital Expenditures	Operating Costs	Operating Revenues	Net Benefits
1973	(3.47)			(3.47)
1974	(9.86)			(9.86)
1975	(20.86)			(20.86)
1976	(32.59)			(32.59)
1977	(49.53)	(.85)	1.89	(48.59)
1978	(45.91)	(3.00)	6.95	(41.96)
1979	(24.14)	(5.55)	13.61	(16.08)
1980	(4.87)	(8.15)	21.65	8.63
1981		(11.38)	29.61	18.23
1982		(13.96)	36.54	22.58
1983		(15.09)	42.09	27.00
1984		(15.36)	45.33	29.97
1985-2000		(15.36)	46.27	30.91

The internal rate of return for the net benefit stream is 10 percent. Assuming consumers willingly pay the increased tariffs which ARETO proposes to charge during the program period, the rate of return is 16 percent. With the increased tariffs, labor shadow priced at 25 percent and local taxes and duties excluded, the internal rate of return is 20 percent.

5. Sensitivity analysis. A sensitivity analysis was performed with the following results:

	Rate of Return
Rate of return with proposed increase in tariffs	16%
10% increase in capital expenditures	16%
10% increase in operating costs	16%
10% decrease in revenues	14%
Two years' delay in program completion	15%
Combination of all factors above	12%

6. Estimate of partial consumer surplus - historical willingness to pay. Any calculated economic rate of return based on existing ARETO tariffs is a significant underestimate of total program benefits since it is based only on the observed willingness of subscribers to pay current tariffs for telecommunication services. In the past, however, consumers in Egypt have been asked to pay higher prices for telecommunications services and have demonstrated a willingness to do so. Thus, a partial estimate of the consumer surplus can be made by tabulating the prices in real terms which existing consumers actually demonstrated a willingness to pay at the time when they acquired telephone service, and by assuming that new consumers will be similar to the average existing consumer. Given the existing investment program, the assumption that new telephone subscribers will have similar characteristics to existing ones is considered by the mission to be reasonable.

7. With one recent exception[1/] telecommunications tariffs have not changed since 1966. Over the 1966-1977 period, however, domestic consumer price inflation of approximately 67 percent has taken place[2/]. As a result, connected subscribers in 1966 were demonstrating that they were willing to pay in real terms more for a more limited access telephone service than current subscribers are being asked to pay. To estimate the prices in real terms which existing telephone subscribers demonstrated a willingness to pay during the period between 1966 and 1977[3/]; a discounted weighted average price paid by existing consumers when they entered the network was calculated. Thus if it is assumed that new subscribers also would be willing to pay (in terms of 1977 prices) what present subscribers have in the past on average demonstrated a willingness to pay, the quantifiable rate of return on the

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1/ Telex annual rental charges were increased in July 1976.

2/ The consumer price index in Egypt increased from a base of 100 in 1966/67 to 167 as of June 1976.

3/ Estimates for average revenue per DEL are not as reliable prior to 1933 as for recent years.

program is 21 percent. This estimate does not explicitly take into account the fact that new subscribers will be receiving a greater quantity of telecommunications service since a much larger number of connected subscribers can be contacted than was the case when existing subscribers joined the network.

8. Estimate of partial consumer surplus-rent differentials and wasted call attempt time. A second approach to consumer surplus estimation is based on the fact that present subscribers are currently incurring higher costs (prices) for telephone service than is revealed in official ARETO tariff schedules. These costs are of two types corresponding to call charges and monthly rentals.

9. Call charges underestimate the true costs of calls since, given the high percentage of call failures, peak period delays waiting for dial tones, the necessity to repeat sentences because of static on the line, etc., a significant amount of otherwise productive time of employed persons is wasted when attempting to make a telephone call. An estimate of the value of that wasted time is made using the following assumptions. (i) The average urban caller earned a wage equal to an estimated LE 6.00 per week in 1976[1/], and assuming he works an average of 45 hours per week, his time is worth approximately LE 0.00222 per working minute. (ii) The average time spent during business hours waiting for a dial tone and trying to make a call which for technical or traffic congestion reasons is unsuccessful (or for recalling when the connection terminates in mid-conversation) is at least 1.5 minutes per unsuccessful call attempt. (iii) Ninety-five percent of all calls made during business hours are business or government related.

10. Given these assumptions which are thought to reasonably reflect the situation in Egypt at this time, and the facts that (i) unsuccessful calls due to technical faults or traffic congestion during prime business hours (during an approximate 5-1/2 day business week) have been estimated as approximately 75 percent of all local call attempts made in Cairo and 55 percent in Alexandria; (ii) that an average of 1,819,845 and 558,880 calls are completed respectively in the two cities during the six peak hours per day when networks are highly congested; and (iii) that an unsuccessful call attempt rate during peak hours of 25 percent would be considered good; an estimate was made of the value of time wasted through unsuccessful local call attempts in Cairo and Alexandria. Given that reliable estimates were not available for the percent of unsuccessful calls in other cities in Egypt, or for the long distance network, no attempt could be made to quantify the total consumer willingness to incur the costs of time wasted trying to make calls.

1/ This estimate was derived by adjusting the 1968 national average weekly wage upward by cost of living changes. This is considered to be a conservative estimate since it is thought that wages generally grew more rapidly than the cost of living over the period, that wages in the large urban areas are higher than the national average, and that wages of telephone users are on average higher than the average urban wage.

11. Some telephone consumers also reveal a willingness to incur a telephone-related cost greater than that reflected in the official ARETO tariff schedule by paying higher monthly rental charges, or incurring higher costs each month just to have a telephone. Local businessmen, and middle and upper income foreigners and Egyptian citizens, sometimes obtain telephones by renting furnished offices or furnished residences in which, legally, the telephone can be transferred as one of the furnishings. It is common in local newspapers to see apartment or office advertisements in which one of the few prominent attributes listed is the presence of a telephone.

12. Estimates made of the extent of the monthly rent differentials which exists for representative offices and apartments which are identical except for the existence of a telephone, are somewhat imprecise due partly to the variety of other factors involved in finding "identical" facilities, and partly due to the small and necessarily ad hoc nature of the sample. Nevertheless differentials of between LE 50 and LE 150 per month were observed for facilities that were similar except for the presence of a telephone. It was also found that rental facilities which had a telephone that was only one of several extensions on one line, or rental facilities located in areas with very high daytime telephone traffic congestion tended to command less of a premium than facilities with private or semi-private lines, or in exchange areas where congestion is less of a problem. It was further observed that the larger and more luxurious apartments or business offices tended to command the largest telephone premiums (LE 150 per month and up) since presumably higher income businessmen and larger business firms tend to categorize a telephone as more of a necessity. Given these findings, an estimate of consumer surplus for the monthly rental of a telephone is made using the following assumptions:

(i) the demand curve for telephone rentals is downward sloping and is shaped in such a way that a relatively small proportion of the total population are willing and able to pay high monthly rentals for telephone service (LE 50), while the vast majority of population would be willing and able to pay only much lower telephone rental charges; as such the demand curve is represented as being convex to the origin of the price and quantity axis[1/];

1/ Mathematically, the demand curve is specified as a rectangular hyperbola with an elasticity of 1. This is thought to be a conservative assumption since empirical estimates of the price elasticity of demand for telephone services are generally significantly less than 1 (more inelastic).

(ii) two points on that demand curve are -- 4,000 telephones (less than 1 percent of the total) at a price of LE 51.50 per month (the official rental fee for automatic message rate exchanges of LE 1.50 per month plus LE 50 representing a typical rent differential payment[1/] and 775,158 telephones (the number of telephones at the end of 1976 plus the number of people on the official waiting list requesting to be allowed to pay at least LE 1.50 per month for the presence of a telephone) at the most common official rental price of LE 1.50 per month.

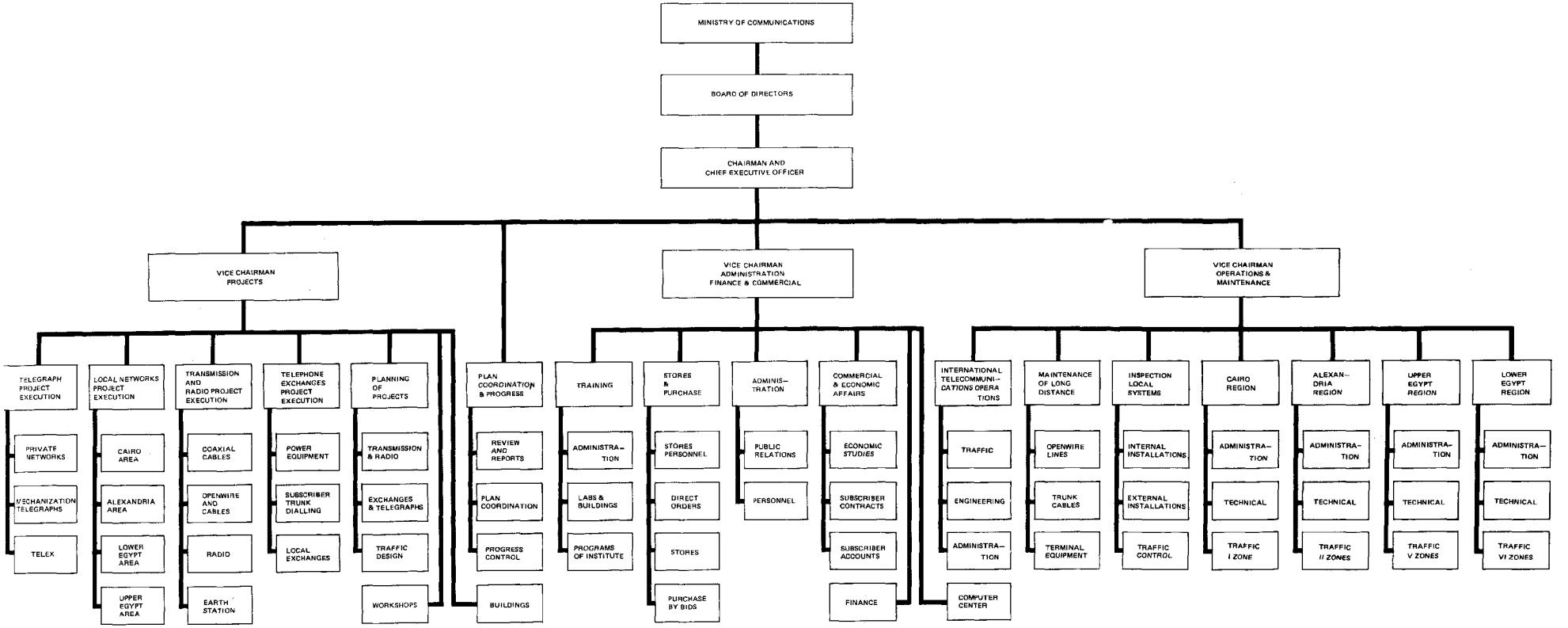
13. The area under the demand curve above a monthly price of LE 1.50 and below a monthly price of LE 51.50 and between the quantities zero and 775,158 telephones is equal to LE 3,135,533. This amounts to an average of LE 4.21 per telephone per month, or LE 50.52 per telephone per year. Thus for purposes of benefit estimation, the value of renting a telephone may be taken to be an average of LE 50.52 per year more than the average rental actually paid to ARETO[2/].

14. Given the above (i) estimate of part of the costs incurred in making a telephone call which consumers willingly pay (official call charge plus time wasted), and (ii) estimate of the yearly value of having a telephone connection (average monthly telephone rental charge plus estimate of rent differential consumer surplus) based on the observed willingness of consumers to pay, a new stream of project benefits is estimated. Using this revised benefits stream and the stream of project costs appropriately shadow priced, the rate of return on the project is 23 percent.

1/ The LE 50 per month rent differential is considered to be a reasonably representative for modest one or two-bedroom second or third floor walk-up apartments or offices with three-party lines occupied by visiting Arabs, expatriate Europeans and upper-middle income Egyptian businessmen.

2/ If the demand curve for telephone rentals was assumed to be linear instead of convex to the origin, the consumer surplus per telephone would be LE 25.13 per month or LE 301.56 per year.

EGYPT
ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)
ORGANIZATION CHART



World Bank – 17911

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Telecommunications Staff

Category	1972	1973	1974	1975	1976
Managerial	14	16	18	19	18
Administrative	716	717	746	819	820
Engineers	860	965	1,064	1,134	1,265
Wire Technicians	3,438	4,086	4,800	5,595	5,520
Wireless Technicians	599	641	644	632	773
Stores Technicians	100	100	101	108	111
Telephone Operators	6,634	6,811	6,908	7,070	7,224
Telegraph Operators	1,881	1,943	1,950	2,059	2,064
Radio Telephone Operators	117	117	116	286	304
Radio Telegraph Operators	998	1,190	1,203	1,276	1,351
Clerks	3,487	3,725	4,069	4,812	5,213
Skilled Workers	11,097	11693	12,333	13,684	14,548
Laborers	8,309	8,896	10,640	10,788	12,606
Contract Appointments	143	129	180	225	173
Total	38,393	41,029	44,772	48,507	51,990

August 17, 1977

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Staff Trained at the Telecommunications Training and Research Institute (TTRI), Cairo

Category	1972	1973	1974	1975	1976
Engineers	33	43	43	-	22
Technicians 1/	541	409	594	592	388
Skilled Workers 2/	135	287	187	411	274
Operators 3/	287	320	223	397	337
Administrative and Clerical Staff 4/	186	248	382	571	293
Refresher Courses 5/	-	-	1,163	806	2,187

1/ Some of these technicians are trained by TTRI to meet the requirements of the Ministry of Education for employment in agencies other than ARETO.

2/ Skilled workers are trained for working on telephone instruments, manual switchboards, cables, open-wire lines, test equipment, exchanges and coaxial equipment.

3/ Includes telephone, telegraph and teleprinter operators.

4/ Includes clerks, typists, store clerks and office assistants.

5/ Refresher courses are held in technical, traffic and administrative disciplines and were started in 1974.

August 17, 1977

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Summary of Telecommunication Tariffs
(as on January 1, 1977)

A. RENTAL AND CALL CHARGES - TELEPHONE CONNECTIONS

	Type of Exchanges	Type of Subscriber	Annual Rental LE	Charge Per Call LE	Free Calls Per Annum
1.	Automatic - Message Rate	Residential	18	0.015	1,500
2.	Automatic - Message Rate	Business	18	0.015	300
3.	Automatic - Message Rate	Mixed (Bus./Res.)	18	0.015	1,000
4.	Automatic - Message Rate	Government	18	0.015	1,000
5.	Public Telephones		18	0.015	300
6.	Automatic - Flat Rate (Cairo and Alexandria Zones Outside Metropolitan Area)	All	27	-	Unlimited
7.	Automatic - Flat Rate (Provinces)	All	21	-	Unlimited
8.	Manual Working 14 hours per day and over	All	21	-	Unlimited
9.	Manual - Working under 14 hours per day	All	15	-	Unlimited

B. RENTAL CHARGE - EXTENSION

	Type of Extension	
1.	Internal	6
2.	External up to 500 meters	8
3.	External over 500 meters	8 plus 1.5 for every additional 500 meters

CONNECTION/SHIFTING CHARGE	LE
1. Exchange Lines	10
2. Extension - Internal	3
3. Extension - External	10

TRUNK CALLS - MANUAL AND STD

	Charge for 3 minutes	
	Day Mils 1/	Night Mils 1/
Up to 25 kms	15	15
Over 25 kms but under 50 kms	30	15
Over 50 kms but under 75 kms	45	30
Over 75 kms but under 100 kms	75	45
Over 100 kms but under 125 kms	100	60
Over 125 kms but under 150 kms	120	75
Over 150 kms but under 175 kms	140	90
Over 175 kms but under 200 kms	160	100
Over 200 kms but under 250 kms	180	110
Over 250 kms but under 300 kms	200	120
Over 300 kms but under 500 kms	250	150
Over 500 kms but under 1,400 kms	350	200

1/ LE 1 = Mils 1,000

2/ Night tariffs apply between 1900 hours and 0700 hours on all days.

E. TELEX

	LE
Rental per line per annum	600 1/
Call charge (per minute)	
Local (Cairo and Alexandria)	0.01
Between Cairo and Alexandria	0.04

F. TELEGRAPHS

LE 0.1 per word

1/ Effective July 1, 1976.

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Revenue Improvement Measures

Measure	(Assumed) Effective Date	Estimated Incremental Revenues (LE millions) 1977	1978	1979	1980
1. Changing the exchange rate for billing international services from the official rate (LE 1 = US$2.56) to the parallel market rate (LE 1 = US$1.43)	July 1, 1977				
Telephone		1.94	4.78	6.31	8.81
Telegraph		1.85	4.12	4.57	5.08
Telex		.79	2.59	3.67	4.82
		4.58	11.49	14.55	18.71
2. Increasing domestic telegraph service charges by 100 percent, from LE 0.01/word to LE 0.02/word	(July 1, 1978)	-	.80	1.70	1.80
3. Increasing telephone installation, transfer and other similar fees by 100 percent	(July 1, 1978)	-	.20	.80	.90
4. Increasing telephone trunk call charges and trunk line leases by 75 percent to 50 percent	(July 1, 1978)	-	2.89	5.21	8.82
5. Increasing telephone rentals (including extensions) by 50 percent	(Jan. 1, 1979)	-	-	6.55	7.41
6. Eliminating/reducing telephone free call allowances, as follows:					
	From / To				
Residential	1,500/year / 1,000/year				
Mixed (business/residential)	1,000/year / 0				
Government	1,000/year / 0				
Commercial	300/year / 0	(Jan. 1,			
Public telephones	300/year / 0	1979)	-	-	2.80	3.06
7. Increasing telephone call charges, as follows:					
	From / To				
Residential	LE 0.015 / LE 0.02				
Mixed (business/residential)	0.015 / 0.03				
Government	0.015 / 0.03				
Commercial	0.015 / 0.03	(Jan. 1,			
Public telephones	0.015 / 0.03	1979)	-	-	3.89	5.17
Total Estimated Incremental Revenues			4.58	14.58	35.50	45.87

February 11, 1978

ANNEX 22

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Income Statements - 1973-80
(LE thousands)

Year ending December 31:	Actuals 1973	1974	1975	1976	Estimated 1977	Forecast 1978	1979	1980
Average number of direct exchange lines (DELs)	323,412	332,638	341,645	348,714	359,427	379,327	410,962	457,562
Average telephone revenue per DEL:								
- excluding tariff increases - LE	58	58	61	69	73	83	100	121
- including tariff increases - LE					78	108	162	197
Operating Revenues								
Telephone	18,809	19,333	20,726	24,155	26,238	31,484	41,095	55,357
Telegraph	3,120	3,547	4,636	6,184	6,802	7,482	8,230	9,053
Telex	681	1,017	1,361	1,753	3,090	5,040	7,140	9,390
Miscellaneous	9	7	12	62	70	79	89	101
Prior years' adjustment	(251)	(108)	(696)	(2,151)	-	-	-	-
From tariff increases[1/]	-	-	-	-	4,580	14,580	35,500	45,870
Total Operating Revenues	22,368	23,796	26,039	30,003	40,780	58,665	92,054	119,771
Operating Expenses								
Salaries	12,080	12,846	14,988	15,311	17,789	20,764	24,200	28,209
Materials	1,280	1,590	1,934	1,901	2,190	2,540	3,020	3,650
Other	760	877	944	1,178	1,340	1,570	1,900	2,260
Prior year's adjustment	189	320	189	47	-	-	-	-
Depreciation	3,350	3,520	3,385	4,800	5,760	8,561	12,528	17,288
Total Operating Expenses	17,659	19,153	21,440	23,237	27,079	33,435	41,648	51,407
Operating Income	4,709	4,643	4,599	6,766	13,701	25,230	50,406	68,364
Other income (net)	392	581	724	1,517	1,500	1,500	1,500	1,500
Net Income (before financial expense)	5,101	5,224	5,323	8,283	15,201	26,730	51,906	69,864
Financial Expense (int. & comm.)	1,194	1,503	1,927	2,542	6,532	11,575	17,553	22,631
Net Income	3,907	3,721	3,396	5,741	8,669	15,155	34,353	47,233
Rate of Return[2/] - %	9.3	9.1	9.1	12.4	18.1	19.7	24.9	23.7
Operating Ratio - %	79	80	82	77	66	57	45	43

1/ See Annex 22 for details

2/ On historically-valued assets

February 11, 1978

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Sources and Applications of Funds - 1973-80
(LE thousands)

Year ending December 31:	Actuals[1] 1973	1974	1975	1976	Estimated 1977	Forecast 1978	1979	1980
SOURCES								
Net income (before financial expense)	5,101	5,224	5,323	8,283	15,201	26,730	51,906	69,864
Depreciation	3,350	3,520	3,385	4,800	5,760	8,561	12,528	17,288
Subscriber's deposits	265	356	203	836	190	1,470	2,260	2,780
Asset valuation adjustment	-	-	-	(9,834)	-	-	-	-
	8,716	9,100	8,911	4,085	21,151	36,761	66,694	89,932
Debt service								
Financial expense	1,194	1,503	1,927	2,542	6,532	11,575	17,553	22,631
Amortization	2,066	2,697	3,163	3,828	12,272	23,077	29,873	38,994
	3,260	4,200	5,090	6,370	18,804	34,652	47,426	61,625
Net available	5,456	4,900	3,821	(2,285)	2,347	2,109	19,268	28,307
Foreign loans and credits								
Existing (ongoing works)	337	1,260	6,878	30,893	27,030	21,800	12,300	600
Proposed IDA credit	-	-	-	-	-	3,000	15,000	15,390
France	-	-	-	-	-	5,060	5,500	940
USAID	-	-	-	-	-	4,200	3,500	700
LME	-	-	-	-	-	8,000	12,450	7,900
Other (other works)	-	-	-	-	-	680	3,480	16,480
	337	1,260	6,878	30,893	27,030	42,740	52,230	42,010
Government financing								
Capital investment	3,139	-	-	-	-	-	-	-
Loans	1,690	7,430	10,650	20,063	24,260	71,349	64,676	60,083
Less: Income transfers	(3,907)	(2,163)	(3,396)	(2,905)	(541)	-	(77)	(6,151)
	922	5,267	7,254	17,158	23,719	71,349	64,599	53,932
Total Sources	6,715	11,427	17,953	45,766	53,096	116,198	136,097	124,249
APPLICATIONS								
Ongoing works	6,457	6,860	16,856	34,090	49,530	50,362	29,636	6,971
Proposed second IDA project	-	-	-	-	-	38,649	61,625	46,726
Other works	-	-	-	-	-	13,051	23,255	45,606
Total construction	6,457	6,860	16,856	34,090	49,530	102,062	114,516	99,303
Capitalized expenses	550	660	890	1,360	1,760	2,050	2,390	2,790
Long-term investments	-	-	-	1,615	-	-	-	-
Net working capital	(292)	3,907	207	8,701	1,806	12,086	19,191	22,156
Total Applications	6,715	11,427	17,953	45,766	53,096	116,198	136,097	124,249
Debt Service Coverage (times)	2.7	2.2	1.8	2.2[1]	1.1	1.1	1.4	1.5
Contribution to investment (%)	87	43	21	(5)	4	2	14	23

1/ Excludes asset valuation adjustment

February 22, 1978

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Balance Sheets, 1973-80
(in LE thousands)

As of December 31:	Actuals 1/ 1973	1974	1975	1976	Estimated 1977	Forecast 1978	1979	1980
ASSETS								
Plant in operation	85,631	88,665	91,630	102,202	142,202	222,102	311,012	424,662
Less: Accumulated depreciation	34,294	37,814	41,199	43,833	49,593	58,154	70,682	87,970
	51,337	50,851	50,431	59,059	92,609	163,948	243,330	336,692
Work in progress	17,084	21,570	36,351	60,539	72,519	96,731	124,727	113,170
Net Fixed Assets	68,421	72,421	86,782	119,598	165,128	260,679	365,057	449,862
Long-term investments	-	-	-	1,615	1,615	1,615	1,615	1,615
Cash and banks	-	790	932	4,681	7,131	12,083	13,723	13,113
Accounts receivable - trade	12,372	13,337	15,652	15,537	13,592	17,928	25,573	33,272
" " - other	752	1,492	1,876	4,741	5,689	6,827	8,192	9,831
Inventories	4,772	6,895	9,160	10,363	12.255	18,215	26,656	36,784
Other assets	9,839	11,749	15,923	22,039	22,900	23,900	25,300	27,100
Total Assets	96,156	106,684	130,325	178,574	228,310	341,247	466,116	571,577
LIABILITIES								
Capital	18,717	18,717	18,717	18,717	18,717	18,717	18,717	18,717
Asset valuation reserve	20,735	20,735	20,735	10,901	10.901	10,901	10,901	10,901
Retained earnings	9,934	11,492	11,492	16,494	24,622	39,777	74,053	115,135
	49,386	50,944	50,944	46,112	54,240	69,395	103.671	144,753
Subscriber deposits	3,739	4,095	4,298	5,134	5,324	6,794	9,054	11,834
Long-term debt								
Domestic	25,198	31,249	39,978	57,831	78,429	144,094	196,682	239,287
Foreign	4,831	4,773	10,409	39,684	58,104	83,451	117,896	138,390
Total	30,029	36,022	50,387	97,515	136,533	227,545	314,578	377,677
Accounts payable	9,965	13,525	22,509	28,516	30,916	36,216	37,516	36,016
Provisions	1,888	1,925	2,014	1,124	1,124	1,124	1,124	1,124
Overdrafts	1,149	173	173	173	173	173	173	173
Total Liabilities	96,156	106,684	130,235	178,574	228,310	341,247	466,116	571,577
Current Ratio	2.1	2.2	1.8	1.9	1.9	2.1	2.6	3.2
Long-term debt/equity Ratio	0.6	0.7	1.0	2.1	2.5	3.3	3.0	2.6

1/ Reflect asset valuation adjustments and account reclassification as detailed in Annex 26.

February 13, 1978

EGYPT

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Notes on Financial Statements and Main Forecast Assumptions

A. Notes on Financial Statements

1. While the financial statements in Annexes 23, 24 and 25 corresponding to actual years 1972-76 are based on ARETO's audited accounts, they do however reflect some account reclassification and adjustment necessary for appraisal and supervision purposes as summarized below.

2. ARETO's accounting statements do not necessarily present ARETO's financial performance and situation in accordance with normal international telecommunications accounting practices. For example, cash in banks is shown gross rather than net of bank overdrafts, checks deposited but not yet cleared and outstanding checks; the latter are included in different accounts either as a separate liability (bank overdrafts) or aggregated in sundry credit or debit accounts. The reason for this is that as a Government Board ARETO follows the Egyptian Standardized Accounting System (SAS)1/, whose main objective is to provide comparable basic data through standardized accounting statements for macroeconomic planning and control purposes.

3. ARETO's accounting statements include certain items -- such as work performed for others, both as an asset and a liability in the balance sheet -- which are normally excluded from financial statements.

4. The financial statements in Annexes 24 and 25 have been adjusted to reflect (a) asset valuations covering the period from 1957 (the time of ARETO's inception) through 1972 and 1973-76 and (b) the effect of the shift in 1976 from the official exchange rate to the parallel market rate as follows (LE millions):

ASSETS	Total	Through 1972	1973-76
Plant in operation	51,969	50,165	1,804
Accumulated depreciation	(15,928)	(18,094)	2,166
Work in progress	(5,909)	(12,208)	6,299
Long term investments	1,615	-	1,615
Accounts receivable-Trade	206	206	-
" " -Other	2,319	-	2,319
Inventories	(223)	(15)	(208)
Other assets	3,395	(937)	4,332
	37,444	19,117	18,327
LIABILITIES			
Asset valuation reserve	10,901	20,735	(9,834)
Retained earnings	(740)	-	(740)
Subscriber deposits	124	124	-
Long-term debt-Domestic	10,596	413	10,183
-Foreign	17,504	-	17,504
Accounts payable	302	(3,791)	4,093
Provisions	(1,243)	1,636	(2,879)
	37,444	19,117	18,327

The unrealized foreign exchange loss arising from the shift in the exchange rate applicable to ARETO's operations amounted to LE 7,831 thousand equivalent and was charged to work in progress. The appraisals of the assets were made by an official and independent ad hoc committee, who followed SAS guidelines and CAO procedures.

1/ Presidential Decree No. 4723 dated December 10, 1966.

5. ARETO's accounting statements through 1975 also understate plant in service (and overstate work in progress by equal amounts) reflecting lack of coordination between the engineering and auditing departments in reporting and accounting of completed works. Plant in service (and work in progress) in Annex 25 have also been adjusted to reflect the plant records of the engineering department which controls this account.

6. The financial statements in Annexes 23, 24 and 25 reflect the above-mentioned reclassification and adjustments. They were prepared by IDA staff based on ARETO's corresponding accounting statements and on supplementary information received during, and subsequent to, appraisal, as well as during, and subsequent to, credit negotiations. The forecast was also developed by IDA staff based on a preliminary forecast prepared by ARETO.

B. Main Forecast Assumptions

Income Statements (Annex 23)

1. The number of direct exchange lines (DELs) presumes implementation of ARETO's development program described in para. 3.01 of the text in accordance with the construction schedule in Annex 15, and as reflected in Annex 4, Growth of Local Telephone System.

2. Telephone revenues reflect the expected increases in (a) the average number of DELs and (b) the average revenue per DEL arising from the plant additions and improvements, particularly of domestic and international long-distance services provided for in the development program. Expected annual overall increases in revenues per DEL of 14% in 1978, 20% in 1979 and 21% in 1980 are attainable and reasonable. A summary of the telephone revenue forecast follows:

	Actual	Forecast			
	1976	1977	1978	1979	1980
Ave. number of DELs - 10^3	348.7	359.4	379.3	411.0	457.6
Annual increase	2%	4%	7%	10%	13%
Average revenue/DEL: Domestic-LE	55	57	65	78	93
Annual increase	1%	4%	14%	20%	19%
International-LE	14	16	18	22	28
Annual increase	119%	14%	13%	22%	27%
Total Telephone-LE	69	73	83	100	121
Annual increase - %	14%	6%	14%	20%	21%
Total revenue 1/ - LE x 10^6	24.16	26.24	31.48	41.10	55.36

1/ Excluding tariff increases.

3. Telegraph revenues have been conservatively estimated to increase at an annual rate of 10% which compares with average annual growth of 25% in 1973-76. The expected lower growth rate allows for the expected increases in long-distance telephone and telex communication which will limit telegraph traffic.

4. Telex revenues reflect the expected increase in telex lines at the average revenue of LE 3,000 per year observed in 1975-76.

5. Revenues from tariff increases correspond to the incremental revenues arising from the adoption of the revenue improvement measures discussed in para. 5.15 of the text and detailed in Annex 22.

6. Staff expense has been calculated based on (a) staff projections of ARETO which allow for moderate increases in productivity beginning in 1978 and (b) average annual salary increases of 10%. ARETO expects that the number of staff will increase at an annual rate of 6% which compares with an average annual growth rate of 8% in 1972-76 (7% in 1976). As in the past, 9% of the staff expense would be charged to construction. A summary of the staff cost projection follows.

	Actual	Forecast			
	1976	1977	1978	1979	1980
Number of staff - year-end	51,990	55,109	58,416	61,921	65,636
- average	50,249	53,550	56,763	60,169	63,779
Annual increase	7%	6%	6%	6%	6%
Average remuneration - LE	332	365	402	442	486
Annual increase	2%	10%	10%	10%	10%
Staff expense - LE x 10^6	16.67	19.55	22.81	26.59	31.00
Less: Charged to construction	1.36	1.76	2.05	2.39	2.79
	15.31	17.79	20.76	24.20	28.21

7. Materials and other expense are projected to increase at the system's growth rate.

8. Depreciation charges are projected at an annual rate of 4.7% of the average gross plant in service. This is consistent with ARETO practice which is governed by SAS regulation; depreciation charges have averaged 5% of depreciable assets. Difference reflects presence of non-depreciable assets.

9. Non-operating income is forecast constant at the 1976 level.

10. Financial expenses (interest and commissions) has been calculated based on the borrowing terms listed in Attachment A to this Annex and the disbursement and amortization schedules in Attachment B. Details are given in Attachment C.

Sources and Applications of Funds (Annex 24)

11. Net working capital (increase)/decrease represents the difference between annual increases in assets other than fixed assets and the corresponding increase in other liabilities, both from the balance sheets (Annex 25).

12. Foreign loans and credits correspond to the disbursement from these sources in Attachment B to this Annex which have been calculated from the investment program in Annex 11.

13. Government loans represent the residual financing required to carry out the full investment program.

Balance Sheets (Annex 25)

14. Cash and banks has been calculated as a function of operating expenses before depreciation plus domestic currency construction expenditure.

15. Accounts receivable (telecommunications) have been calculated at 33% in 1977, 31% in 1978 and 28% thereafter of the year's operating revenues, to allow for the settlement of Government agency arrears (para. 5.12 of the text).

16. Other accounts receivable have been forecast to increase 20% annually which compares with average growth of 44% in 1972-76.

17. Inventories have been forecast to increase proportionately to gross plant in service.

18. Other liabilities have been calculated as a function of operating expenses before depreciation plus total construction expenditure.

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ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

	Borrowing Terms			
	Term (years)	Grace (years)	Interest Rate	Other Fees
Foreign Loans and Credits				
Ongoing Works				
IDA Credit #548-EGT[1]	20	3	7% p/a	1-1/2% p/a
Other	Various[2]	Various[3]	Various[4]	
Second IDA Project				
Proposed IDA Credit[5]	20	3-1/2	7.45% p/a	
France[6]	7[7]	2-1/2	8[8]	
USAID[9]	10[10]	None	5% p/a	
LME	7	None	8-1/2% p/a	
Other Works	Various[11]	Various[12]	Various[13]	
Government Loans	13	1	5% p/a	

1/ Onlending terms

2/ Ranging from 5 to 18 years

3/ Ranging from none to 3 years

4/ Ranging from 3-1/2% to 9% p/a

5/ Onlending terms

6/ Mixed treasury (1/4) and commercial bank (3/4) funds

7/ Twenty five years, including 2-1/2 years' grace on Treasury funds, and 12-1/2 years, including 2-1/2 years' grace on commercial bank funds

8/ 3.5% p/a on Treasury funds and "usual" commercial bank rate (assumed to be 9% p/a) plus COFACE credit commission (assumed to be 1% p/a) on commercial bank funds

9/ Onlending terms

10/ Ten years for equipment purchases and three years for spare parts

11/ Ranging from 5 to 20 years (tentative)

12/ Ranging from none to 3 years (tentative)

13/ Ranging from 3-1/2% to 9% p/a (tentative)

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ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Disbursement and Amortization Schedules
(in LE thousands)

	Disbursement					Amortization				
	1977	1978	1979	1980	Total 1978-80	1977	1978	1979	1980	Total 1978-80
A. Foreign Loans and Credits										
Existing (ongoing works)	27,030	21,800	12,300	600	34,700	8,610	10,530	12,790	13,340	36,660
Second IDA Project										
Proposed IDA Credit 1/	-	3,000	15,000	15,390	33,390	-	-	-	-	-
France	-	5,060	5,500	940	11,500	-	-	-	497	497
USAID	-	4,200	3,500	700	8,400	-	1,134	1,134	1,134	3,402
LME	-	8,000	12,450	7,900	28,350	-	5,670	3,686	4,536	13,892
	-	20,260	36,450	24,930	81,640	-	6,804	4,820	6,167	17,791
Other (other works)	-	680	3,480	16,480	20,640	-	59	175	2,009	2,243
	27,030	42,740	52,230	42,010	136,980	8,610	17,393	17,785	21,516	56,694
B. Government Loans 2/	24,260	70,749	64,676	60,083	195,508 2/	3,662	5,684	12,088	17,478	35,250
	51,290	113,489	116,906	102,093	332,488	12,272	23,077	29,873	38,994	91,944

1/ Disbursements of LE 3,710 (US$5,305) thousand are expected in 1981

2/ Include LE 4,200 thousand equivalent to cover the foreign exchange costs of raw materials and component parts of Egyptian suppliers needed to meet project requirements

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ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Interest and Commissions Schedule
(in LE thousands)

		1977	1978	1979	1980	Total 1978-80
A.	Foreign Loans and Credits					
	Existing (ongoing works)	3,401	5,853	7,017	6,784	19,654
	Second IDA Project					
	Proposed IDA Credit	-	56	782	1,914	2,752
	France	-	212	656	907	1,775
	USAID	-	77	212	261	550
	LME	-	99	570	1,086	1,755
		-	444	2,220	4,168	6,832
	Other (other works)	-	11	112	1,096	1,219
		3,401	6,308	9,349	12,048	27,705
B.	Government Loans	3,131	5,267	8,204	10,583	24,054
	Total Financial Expense	6,532	11,575	17,553	22,631	51,759

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ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION (ARETO)

Performance Indicators

A set of indicators which would assist in monitoring ARETO's performance during the 1978-80 period is given in the statement below. ARETO through periodical progress reports will indicate actual performance relating to these items.

		1977	1978	1979	1980
(a)	Additional telephone exchange lines equipment installed	27,600	31,200	53,609	81,300
(b)	Additional telephone connections installed	14,530	25,270	38,000	55,000
(c)	Number of employees[1/] per 1,000 telephones	104	103	101	92
(d)	Gross revenue (LE million)	40.8	58.7	92.1	119.8
(e)	Telephone revenue per DEL (LE)	78	108	162	197
(f)	Rate of return (%)	18	20	25	24
(g)	Operating ratio (%)	66	57	45	43
(h)	Debt service coverage (times)	1.1	1.1	1.4	1.5
(i)	Long-term debt/equity ratio (times)	2.5	3.3	3.0	2.6
(j)	Receivables (telecommunications) in days	120	110	100	100

1/ This includes personnel engaged in telegraph and radio operations and construction, but excludes personnel on deputation.

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IBRD - 11323R1
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