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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

ETHIOPIA
APPRAISAL OF THE FINCHAA HYDROELECTRIC PROJECT
OF THE
ETHIOPIAN ELECTRIC LIGHT AND POWER AUTHORITY

April 10, 1969

Public Utilities Projects Department

CURRENCY EQUIVALENTS

US\$ 1	=	Eth\$2.50
Eth\$ 1	=	US\$0.40
Eth\$ 1 million	=	US\$400,000

Fiscal year ends September 10th

MEASURES AND EQUIVALENTS

kw	- kilowatt	=	1,000 watts
MW	- megawatt	=	1,000 kilowatts
kwh	- kilowatt hour	=	1,000 watt hours
- kilovolt	=	1,000 volts	
km	- kilometer	=	0.6214 miles
m	- meter	=	3.28 feet
m ³	- cubic meter	=	35.3 cubic feet
hm ³	- million cubic meters	=	35.3 million cubic feet

ABBREVIATIONS AND ACRONYMS

AID	-Agency for International Development
EDF	-Electricite de France
EELPA	-Ethiopian Electric Light and Power Authority

ETHIOPIA

APPRAISAL OF THE FINCHAA HYDROELECTRIC PROJECT

THE ETHIOPIAN ELECTRIC LIGHT AND POWER AUTHORITY

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This report was prepared by Donald King and Maurice J. Reis

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MAP

ETHIOPIA

APPRAISAL OF THE FINCHAA HYDROELECTRIC PROJECT

THE ETHIOPIAN ELECTRIC LIGHT AND POWER AUTHORITY

SUMMARY

- i. This report covers the appraisal of a project of the Ethiopian Electric Light and Power Authority (EELPA) consisting of the construction of the 100 MW Finchaa hydroelectric plant and associated transmission in Ethiopia. The project is estimated to cost a total of US\$33.8 million equivalent and the proposed loan would cover the foreign exchange cost amounting to US\$23.1 million equivalent, including interest during construction. The project represents the major portion of the overall expansion program of EELPA, the total cost of which is estimated at about US\$49 million during the project construction period 1969-73 inclusive.
- ii. The project was to have been financed by an AID loan but when it appeared in October 1968 that the cost would be substantially higher because of the lack of international bidding the Ethiopian Government requested the Bank to finance it instead.
- iii. The borrower would be EELPA, a statutory corporation of the Ethiopian Government. One previous loan for power, No. 375-ET for US\$23.5 million, was made to EELPA in 1964 for the construction of the Awash II and Awash III hydroelectric stations and associated transmission and distribution. While commissioning of the Awash III station has been delayed two years because of construction difficulties, experience with the loan has otherwise been satisfactory and EELPA is deemed to be a suitable borrower. Since its formation in 1955 it has developed into an efficient utility and has made good progress in developing its organization.
- iv. The project is technically sound, the estimated cost is reasonable and the arrangements for engineering, procurement and construction are satisfactory. The facilities to be provided are necessary to enable EELPA to meet the expected demands for power. The financing arrangements are satisfactory.
- v. The project would be suitable for a Bank loan of US\$23.1 million equivalent for 25 years including a grace period of five years.

ETHIOPIA

APPRAISAL OF THE FINCHAA HYDROELECTRIC PROJECT

THE ETHIOPIAN ELECTRIC LIGHT AND POWER AUTHORITY

I. INTRODUCTION

1.01 This report covers the appraisal of a project of the Ethiopian Electric Light and Power Authority (EELPA), consisting of the 100 MW Finchaa hydroelectric development and the associated 215 km, 220 kv transmission line and terminal substation. The Bank has been asked to make a loan of US\$23.1 million to cover the estimated foreign exchange cost, including interest during construction. The proposed loan would represent 68% of the total cost of the project, estimated at US\$33.8 million equivalent, and 50% of the total cost of EELPA's expansion program during the 1969-73 project construction period. The Borrower would be EELPA, a statutory corporation of the Ethiopian Government.

1.02 The Ethiopian Government had made a loan agreement with AID for the construction of Finchaa and about US\$700,000 was actually disbursed for consulting services. However, when bids were received from United States contractors for the civil works, EELPA and its consultants deemed them to be too high. Representations were then made to AID to enlarge the scope of the bidding to include foreign as well as U.S. contractors but this was not found possible under the provisions of AID assistance. The Ethiopian Government and EELPA were not prepared to pay the extra cost which they considered would result from lack of international competition, AID having indicated that it would not be able to increase the amount of the loan to cover the increased costs. Accordingly, in October 1968, the Ethiopian Government and EELPA requested the Bank to finance the project. However, AID has agreed to continue to finance consulting services until the proposed Bank loan is signed, additional AID disbursements of US\$400,000 being estimated in this connection, up to a maximum cumulative amount of US\$1,200,000. The remainder of the AID Loan would then be cancelled, repayment of the amount actually lent commencing in 1975 in accordance with the provisions of the agreements.

1.03 This is the second loan to EELPA, Loan 375-ET having been made in 1964 for an amount of US\$23.5 million to finance the construction of the Awash II and Awash III hydroelectric plants and associated transmission and distribution facilities. The Awash II plant has been in service since 1967 and is operating successfully. However, when Awash III was about to be placed in service in February 1968 damage occurred to the pressure tunnel when it was filled with water and the plant was shut down. An investigation determined that the failure was due to a combination of factors including poor design and construction. It appears that the consultants and contractor are at least partially to blame. It is expected that the repairs for which some contracts have been let will cost about US\$700,000 equivalent which will be financed from the remaining funds in Loan 375-ET, resulting in its full disbursement. The plant should be placed in service during the first half of 1970. It has been necessary to postpone the Closing Date of Loan 375-ET accordingly. Other than the difficulties with Awash III, the performance of EELPA has been satisfactory under Loan 375-ET.

1.04 The appraisal and this report were made by Messrs. D. King and M. J. Reis.

II. THE ELECTRIC POWER SECTOR

2.01 Ethiopia has a population of about 23 million and an area of 450,000 square miles. The population is widely distributed and the largest urban center is the capital, Addis Ababa, with a population of about 700,000. The country is predominantly agrarian, agriculture accounting for about two-thirds of the Gross Domestic Product (GDP). Population is increasing at the rate of about 2% annually and GDP increased at an average annual rate of about 4.3% in the first five years of the 1960-70 decade.

2.02 While manufacturing, small scale industry, construction and trade represent the minor part of the GDP, as distinct from agriculture and public services, they achieved a high rate of growth in the period, outstripping that of the agriculture sector. As a result, the growth of electricity use has been substantial and, moreover, at least half of the amount consumed is for industrial and commercial purposes.

2.03 Government policy in the power sector is to extend service to the larger population and administrative centers as capital and other considerations permit. There are now about 35 centers with a total population of about 1.5 million people served by EELPA. In addition in the province of Eritrea adjoining the Red Sea electricity service is provided by an Italian investor owned utility to Asmara, the second largest city in Ethiopia, and to Massawa. The prospect is that electricity supply will be confined to population centers for considerable time to come; there is no significant rural distribution and given the dispersed nature of the agricultural community and its low monetary income the prospect of any rural electrification in the foreseeable future is unlikely.

The Borrower

2.04 EELPA was established by Imperial Charter in 1955 as a statutory corporation of the Ethiopian Government which is the sole owner thereof. The authority is well organized and functions with a high degree of autonomy. It is responsible for public electricity supplies in Ethiopia with the exception of the enterprise referred to in paragraph 2.03 and a few thermal plants owned and operated by industries to supply their own needs. Responsibility for EELPA's operations are vested in a Board of Directors consisting of a Chairman and not more than nine other members appointed on the recommendation of the Minister of Finance. At present there are six directors, predominantly from the field of Government enterprise and public affairs, all of whom are experienced in administration and finance.

2.05 The General Manager is appointed by the Government on the recommendation of the Board. The present General Manager, appointed to the post in February 7, 1969 is an experienced engineer and administrator who has been with EELPA for 13 years. His predecessor, who directed EELPA for 16 years, was appointed to the cabinet.

2.06 The authority is reasonably well managed, operated and organized. Over the course of time Ethiopians have replaced foreigners in the senior positions and for several years the only senior post held by a foreigner has been that of financial comptroller. Loan 375-ET provides that the Bank will be consulted before appointments to the posts of General Manager, Chief

Engineer and Financial Comptroller are made. The Government and EELPA have agreed to continue to consult on new appointments to these posts. EELPA has approximately 1,700 employees exclusive of temporary labor hired for construction purposes. Approximately 1,000 are engaged in operations, 200 in accounting, and 500 in clerical and administrative work. Some 35 engineers are responsible for engineering and supervision of operations. The design/engineering of large projects is entrusted to consulting engineers.

2.07 EELPA has a training school for operators and maintenance men, operated by foreign personnel under the auspices of Electricite de France (EDF) under French Government assistance. EELPA sends some of its more promising employees to the Haile Selassie University in Addis Ababa for engineering training. In addition it is planning to send some employees abroad for post graduate technical training and the proposed loan includes an amount of \$100,000 for this purpose. EELPA has retained the services of EDF to review the administrative practices of the organization. While the Accounting Department is well administered it continues to have the problem of staff leaving for better paid positions, leading to insufficient middle level staff. EELPA is making efforts to improve this situation.

2.08 The number of employees, of which there are 55 per thousand consumers, the training programs and the organizational structure are appropriate to the services EELPA provides, and operating costs are reasonable. Power system losses amount to 14% including station auxiliary services, which is reasonable. EELPA should be able to satisfactorily undertake the construction of the proposed project with the assistance of its new consultants, Harza Engineering Co., and operate it satisfactorily thereafter.

Facilities of the Borrower

2.09 EELPA's main electricity facilities are interconnected and the interconnected system, shown on the map, accounts for about 85% of sales. In addition EELPA serves some 23 communities by isolated or self-contained power systems, each such system having its own thermal or hydroelectric plant and distribution system. Annex 1 lists the generating facilities of the interconnected and self-contained systems, the former having an aggregate generating capacity of about 126,000 kw and the latter of about 26,000 kw. The main generating stations which supply the interconnected system are located on the Awash River. While some storage capacity is provided, the generating stations are subject to a substantial reduction in capacity during dry years. The Finchaa generating station, the object of the proposed loan, will be located on another river, with adequate storage. Integration of its operation with existing generation stations would improve the overall system characteristics.

2.10 In 1967 the high voltage transmission system comprised 560 km of transmission circuit operating at 132 kv. There were approximately 1,000 km of primary distribution circuit and 2,200 km of low voltage lines. Distribution transformer capacity totalled approximately 120,000 kva. Secondary distribution is almost entirely of overhead construction.

Future Expansion Program

2.11 In addition to the proposed project EELPA has planned a program of expansion during the 1969-73 project period estimated to cost US\$15 million equivalent approximately. This would provide for expansion of the distribution systems and for the establishment of self-contained systems at 17 new communities, involving installations aggregating about 9,000 kw of hydroelectric and diesel electric generating capacity.

2.12 This program is contingent on further study and review, the availability of capital and the priorities established by the Government. As noted in paragraph 2.03, the Government decides on the provision of electricity supply to communities on the basis of their size and importance. The program, therefore, is flexible and should less capital than foreseen be available to EELPA it would be reduced, or phased out over a longer period.

2.13 Given that thermal power is very expensive (para. 4.11), EELPA would likely start the construction of a new hydroelectric facility in 1974 to have additional power available about 1977/78 when the full output of Finchaa is expected to have been utilized. While there are a large number of hydroelectric sites in Ethiopia many of them are too distant from the present interconnected system, or too large for the immediate future needs of EELPA. There is no proper inventory of hydroelectric resources within reasonable transmission distance of Addis Ababa to assist in making a choice. EELPA plans to have an appropriate reconnaissance made and is seeking a grant from UNDP, or some other source, for this purpose.

III. THE PROJECT

3.01 The project would comprise the construction of the 100 MW Finchaa hydroelectric station and associated 220 kv transmission line with a length of 215 km, and terminal substation located near Addis Ababa. The project cost of US\$33.8 million equivalent including interest during construction would represent 68% of the total cost of EELPA's expansion program during the project construction period, 1969-73.

Finchaa Hydroelectric Station

3.02 The Finchaa hydroelectric station would be located on the Finchaa River, a tributary of the Blue Nile, approximately 170 km northwest of Addis Ababa, as shown on the map. A low earth-filled dam located slightly upstream from the escarpment over which the river falls would enable a large storage reservoir to be created with a useful volume of 650 million cubic meters. Annual average firm production is estimated at 532 million kwh, giving a 60% plant factor.

3.03 The power station would be of the above ground conventional type equipped with three 33.3 MW generators, operating at a head of 590 meters. Pelton type turbines suitable for high head operation would be used. The main features of the civil works would be the earth-fill dam, the pressure tunnel and penstock system and the access road from the dam to the powerhouse. The dam would have a height of 20 meters and a length of about 340 meters with a total volume of earth and rock fill of 180,000 cubic meters. The 3.0 meter diameter pressure tunnel would be 4,200 meters long, leading to an inclined surface penstock 1,450 meters long. The geological conditions have been thoroughly investigated and the route of the tunnel and penstock laid out to minimize construction difficulties. No serious problems arising from geological conditions are expected.

3.04 There is no existing access to the floor of the canyon in which the power station is to be built and it is necessary to build a road, partly in tunnel, about 7 km in length. Access to the dam site on the top of the escarpment from the nearest highway will necessitate the construction of a road 90 km long following an existing trail. It is necessary to start construction of the latter road in advance of that of the project proper and a contract for this purpose has been awarded to a local firm. This road will not, therefore, be financed from the proposed loan. However, its cost is included in the cost estimate of the project.

3.05 The transmission line would be single circuit, steel tower construction, 215 km in length, generally following the route of the main access road and highway leading to Addis Ababa. It would be impractical to route it in a straight line between Finchaa and Addis Ababa in view of the rugged gorges of the Blue Nile tributaries which lie in this direction and which are almost inaccessible for construction purposes. At the Addis Ababa end of the line there would be a terminal station of 105 MVA capacity.

Estimated Cost

3.06 The estimated cost of the project is given in Annex 2 and is summarized below:

	<u>Estimated Cost of Project</u>					
	Millions of Eth\$			Millions of US\$		
	<u>Local</u>	<u>Foreign</u>	<u>Total</u>	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
<u>Finchaa Station</u>						
Access Road	6.2		6.2	2.5		2.5
Civil Works	10.0	21.4	31.4	4.0	8.5	12.5
Elect. & Mech. Equipment	1.2	8.8	10.0	0.5	3.5	4.0
Engineering & Other Services	2.9	<u>1/</u> 2.6	5.5	1.1	<u>1/</u> 1.1	2.2
Contingencies	<u>2.7</u>	<u>4.1</u>	<u>6.8</u>	<u>1.1</u>	<u>1.6</u>	<u>2.7</u>
Sub-total	<u>23.0</u>	<u>36.9</u>	<u>59.9</u>	<u>9.2</u>	<u>14.7</u>	<u>23.9</u>
<u>Transmission</u>						
Transmission and Substation	2.9	10.1	13.0	1.2	4.0	5.2
Engineering & Other Services	0.3	<u>1/</u> 0.9	1.2	0.1	<u>1/</u> 0.4	0.5
Contingencies	<u>0.5</u>	<u>1.1</u>	<u>1.6</u>	<u>0.2</u>	<u>0.5</u>	<u>0.7</u>
Sub-total	<u>3.7</u>	<u>12.1</u>	<u>15.8</u>	<u>1.5</u>	<u>4.9</u>	<u>6.4</u>
TOTAL	26.7	49.0	75.7	10.7	19.6	30.3
Interest During Construction	<u>-</u>	<u>8.8</u>	<u>8.8</u>	<u>-</u>	<u>3.5</u>	<u>3.5</u>
GRAND TOTAL	<u>26.7</u>	<u>57.8</u>	<u>84.5</u>	<u>10.7</u>	<u>23.1</u>	<u>33.8</u>

The total cost of the project would be US\$33.8 million equivalent including interest during construction of US\$3.5 million. The proposed loan of US\$23.1 million is for the foreign exchange cost of the project including consulting services and interest during construction. The loan would represent 68% of the estimated cost of the project. No reimbursements would be made for expenditures incurred prior to signing of the proposed loan.

3.07 The unit cost of Finchaa would be US\$240 per kw excluding transmission and interest during construction and US\$303 per kw when transmission is included. This is a reasonable cost for a hydroelectric plant of this size and type. The cost estimate was made by Harza Engineering Company of Chicago, consultants for the project. It is based on the feasibility study

1/ The local cost of engineering services includes the amounts to be disbursed by AID for engineering (para. 1.02).

made by Harza in 1965/66, modified for increases in cost during the interim period and reflecting the detailed design work carried out in 1968. Contingency allowance of 10% on equipment and 15% on all other construction costs have been included. Given that the tunnel-penstock system and the access road to the powerhouse, works on which considerable cost over run can be experienced, together represent almost one-third of the cost of the project, the possibility of increasing the contingency amount for construction costs was considered. However, this is considered unnecessary as the consultants are confident that the amount incorporated for contingencies is adequate given the extensive and detailed nature of the geological and other studies which have been made.

Engineering, Procurement, Construction and Disbursement

3.08 The consultants are responsible for the detailed design of the project and supervision of construction. With the exception of the 90 km access road to the dam site, which will not be financed by the Bank (para. 3.04), construction will be carried out under a civil works contract awarded on the basis of international competitive bidding. Procurement of equipment would be on the basis of international competitive bidding except for certain minor items for which such bidding would be impractical. Disbursements would be made for 100% of the foreign exchange cost of the installed/erected goods and services. The provisions contained in Loan 375-ET requiring the employment of consultants and contractors satisfactory to the Bank are repeated in the proposed agreement.

3.09 Tenders for the main contracts are to be called during the first half of 1969 and most of them should be awarded by the middle of the year. The access road to the site should be substantially completed by the rainy season in the fall of 1969 and construction would then start. The three generators are scheduled for service in 1972.

3.10 The project has already experienced some delay because of the change from AID to prospective Bank financing, since it was necessary to call for completely new bids. The construction schedule is therefore quite tight, although it can be met if undue delays are not experienced. Nevertheless, there is a considerable possibility of delay, the results of which possibility are assessed in paragraph 4.09.

IV. JUSTIFICATION OF THE PROJECT

Load Growth

4.01 Annex 3 gives the actual and forecast energy sales for the period 1964-74 for the entire system and for the interconnected system and self-contained systems, respectively. Finchaa would increase the generating capacity of the interconnected system which as noted previously, accounts for 85% of total sales.

4.02 During the five years, 1964-68, total system sales have increased at an average annual rate of about 18%, those of the interconnected system by 15% and of the self-contained systems by over 40%. The very large increase in sales of the self-contained systems reflects the provision of electricity supply to localities not previously served as well as the growth of those which were already supplied.

4.03 An average annual increase of 15.2% of total system sales, 13.0% for the self-contained systems and 15.8% for the interconnected system, is forecast for the six-year period of 1969-74. The forecast for the self-contained systems is based on past trends in the localities served and estimated sales to the areas in which new facilities are to be established; the relatively low growth rate forecast is due in part to the discontinuance starting in 1969 of off-peak sales to a textile factory. The forecast of sales to the interconnected system is based on past trends, the prospective increase in the number of consumers to be supplied, and industrial prospects.

4.04 On the interconnected system there were approximately 70,000 consumers in 1968, representing an increase of 70% during the previous five years. In 1969-74 it is estimated that the number of consumers will increase to approximately 129,000, or at roughly the same percentage rate. This is consistent with the outlook for the domestic and light commercial load category which increased at an annual average of 14.1% in the 1964-68 period and is projected to grow at an annual rate of 14.2% in 1969-74. The estimated growth of this category of service seems reasonable.

4.05 In the industrial category there are on the interconnected system some 25 consumers each purchasing more than 300,000 kwh annually. Among the larger industrial and heavy commercial consumers are textile, cement, sugar plantation and processing, tanning, fiber and other factories, and various large hotels and buildings. Prospective new large consumers include a large sugar plantation expansion involving sales of 5 million kwh annually, a pulp and paper plant with a demand of 2,000 kw, a cement plant to take about the same amount of power, the possibility of a new artificial fiber plant which might require about 40 million kwh annually, and various smaller projects including a milling plant, a tire factory, and a glass factory.

4.06 Growth of heavy commercial and industrial load on the interconnected system increased at the rate of 21.2% annually in the 1964-68 period and is estimated to grow 17.6% annually in 1969-74. Given the background of present and prospective industrial projects the projected rate of increase is reasonable.

4.07 This outlook is reinforced by the pattern of industrial development in Ethiopia. While industry as noted in paragraph 2.02 is comparatively limited for the size, population and resources of the country, it has increased in recent years at a comparatively rapid rate. Given the necessary organization and capital, future industrial growth should continue at a high rate. Since industry is predominantly in the area presently served by the interconnected system, centering in Addis Ababa, it is probable that the forecast of industrial growth on this system will be realized. If anything, the estimate might be on the conservative side. For this reason, it is important for EELPA to plan for a reasonable capacity reserve so that in the event of accelerated industrial development, power supply would not be a limiting factor. In view of the foregoing and the explanations contained in paragraphs 4.04-4.06 the load forecasts are considered sound.

System Capacity

4.08 Annex 1 tabulates existing and planned generating capacity and Annexes 4 and 5 give in chart form the relationship between capacity and demand for the peak and energy requirements of the interconnected system. It is evident that by placing the Finchaa project in service in 1972 the capacity of the interconnected system would keep pace with the demand, and some reserve capacity would be provided. The energy production from the hydroelectric stations of the interconnected system is based on dry year conditions. The reduction in output, which can be experienced at the Awash River plants in such years (paragraph 2.09), is of particular concern; in 1966 a dry year was experienced, unfortunately coinciding with a several months' delay in commissioning of the Awash II station, resulting in rationing of power. In determining the firm peak capacity, allowance has been made for the reduction in output experienced during dry years at the Awash stations, and for equipment outages.

4.09 Annexes 4 and 5 further indicate that the commissioning of Finchaa might be delayed by some six months without serious risk of a shortage of capacity. This margin provides some leeway in the event construction of Finchaa is delayed. The schedule of construction is tight (paragraph 3.10) because of the delays resulting from changing from AID to Bank financing and there is considerable possibility of delays of six months or possibly more. In any case, given the possibility of a larger industrial electricity growth than forecast (paragraph 4.07), it is advisable to maintain some margin of reserve.

Rate of Return

4.10 Annex 6 discusses the rate of return of the Finchaa project. The present worth of the revenue from the project, less expenses, over its life was determined as equalizing the cost of the project at a discount rate of 19%. The expenses applicable to the project exclude, for this purpose, the income taxes which would be payable by EELPA to the Ethiopian Government on the profits from the project, since they are a direct benefit to the economy and constitute an internal transfer. The opportunity cost of capital in Ethiopia is difficult to determine since there is no real

capital market in the country. However, the various forms of loans and credit available bear interest rates of from 6-1/2% - 9-1/2%. It is highly probable, therefore, that the estimated rate of return of the project of 19% would be in excess of the opportunity cost of capital.

Alternative Sources of Capacity

4.11 The Finchaa project represents the most economic form in which additional generating capacity can be provided, inasmuch as the cost of fuel oil is very high. There are no known fossil fuels in Ethiopia and fuel oil for use in the Addis Ababa region has to be imported through Djibouti on the Indian Ocean and transported over 700 km by rail, resulting in a cost of US\$40 per ton delivered to Addis Ababa. Power produced from a thermal plant the size of Finchaa would cost about US 1.3 cents per kwh for the fuel alone. Calculation has determined that the present worth of the cost streams of the capital and operating costs of Finchaa, over its life, equals that of a similar sized thermal plant at a discount rate of about 17%. This is further indicative of the high cost of thermal power.

4.12 In view of the foregoing comments concerning load growth (paragraphs 4.01 - 4.07), system capacity (paragraphs 4.08 and 4.09), rate of return and alternative sources of capacity the project is well justified.

V. TARIFFS

5.01 EELPA's charter gives it the legal power to establish rates and regulations for the sale of electrical energy as it sees fit. However, in practice EELPA has in substance obtained the approval of the Government before changing rates.

5.02 No changes in tariffs have been made since 1960 when the Awash I hydroelectric plant went into operation. At that time rates were made uniform and were reduced about 30% for the interconnected system and by a larger percentage for the self-contained systems.

5.03 Government policy is to have EELPA charge uniform tariffs throughout the service area. The great majority of customers are served under general tariffs providing for a service charge of \$1 Ethiopian per month and a kwh charge of 15¢ Ethiopian (6¢ US) for the first 100 kwh per month and 10¢ thereafter. Approximately half the customers used 25 kwh or less per month and only 13% used over 100 kwh per month. The other major and lower tariff, that for commercial and industrial sales, is comprised of a charge of 10¢ Ethiopian per kwh for the first thousand kwh per month and 5¢ thereafter. This tariff includes a customary demand charge and provides for discounts of from 5% for customers purchasing more than 100,000 kwh per month to 20% for customers purchasing more than one million kwh per month. The street lighting rate is 10¢ Ethiopian per kwh plus a service charge which results in an average price of 10.3¢ per kwh. The tariff structure is generally satisfactory but has not been studied for a number of years. Therefore a review of the tariff structure is under consideration by the management.

5.04 In 1968 sales of the interconnected system under the various tariffs were as follows:

	KWH Sold (millions)	Revenue Eth\$ (millions)	% of Total	Average Rate per KWH Eth cents
General	68.6	9.18	58	13.4
Commercial and industrial	103.4	6.42	40	6.2
Street lighting	<u>3.2</u>	<u>0.33</u>	<u>2</u>	<u>10.3</u>
	175.2	15.93	100%	9.1

5.05 Loan 375-ET requires that EELPA finance at least 40% of the cost of expansion from net internal cash generation, which percentage may be revised by agreement of EELPA and the Bank. It is estimated that the expansion program can be met without a general adjustment in rates. Projected earnings after income taxes in relation to the book value of average net fixed assets in operation vary between 7.1% and 8.8% which is satisfactory.

Since the projected capital requirements in relation to internal cash generation show considerable year to year fluctuation the administration of this covenant is difficult even though it has been met in the past. Therefore there has been substituted in the proposed loan agreement a rate base-rate of return provision that the tariffs be sufficient to provide annual operating income, after deduction of income taxes, equal to no less than 7% of average net fixed assets in operation valued or revalued on a basis satisfactory to the Bank. (This approximates 9% before deduction of income taxes.)

VI. PAST OPERATIONS

6.01 Actual income statements for the fiscal years 1965-1967 and on a provisional basis for 1968 are shown in Annex 7. During this period kwh sales increased from 153 million kwh in 1965 to 221 million kwh in 1968, an annual average increase of 13%. Between 1965 and 1968 operating revenues, of which 5/6ths are obtained from the interconnected system, increased 49% and operating expenses including depreciation and income taxes increased only 37%. EELPA follows conservative accounting policies and charges all overhead expenses in connection with construction to operating revenues and does not capitalize interest during construction.

6.02 The year 1966 was a dry year and was not normal. In that year EELPA discontinued off peak sales to a steel arc furnace plant thereby reducing sales by 10 million kwh. As a result total sales increased about 9% and the average price per kwh increased 4%. Moreover, low river flows necessitated substantially higher than normal fuel expenses for steam generation, a situation which was rectified in 1967 when the Awash II hydroelectric plant came into operation.

6.03 Income taxes in accordance with applicable tax laws were levied on a graduated scale to a maximum rate of 36% with the tax payable at the top rate varying in inverse proportion to the paid-up capital. The three rates of taxation with Eth\$55 million of share capital were 16% on the first Eth\$412,500 of income, 26% on the next Eth\$1,650,000 and 36% on the remainder.

6.04 Operating income after meeting all expenses including income taxes of EELPA and the rate of return, representing the relationships of operating income to average net fixed assets in operation, were as follows for the past four years:

<u>Fiscal Year</u>	<u>Operating Income (million Eth\$)</u>	<u>Rate of Return</u>	
		<u>Before Income Taxes</u>	<u>After Income Taxes</u>
1965	3.65	8.7%	6.4%
1966	3.98	8.8	6.9
1967	5.77	9.7	7.6
1968 (provisional)	6.53	9.3	7.2

Interest charges were covered by operating income before income taxes no less than 3.0 times in any of the years in the four year period. Past results have been satisfactory.

VII. PRESENT FINANCIAL POSITION

7.01 EELPA's financial statements are audited by Mann Judd and Co. These arrangements have been satisfactory and the proposed loan agreement contains a provision that independent auditors satisfactory to the Bank will continue to be employed. Improvement in the time lag (11 months in the 1966 fiscal year) in preparing past financial statements has been made by EELPA. Provision has been made in the proposed loan agreement that audit reports be sent to the Bank within five months of the close of each fiscal year.

7.02 The financial state of EELPA is shown in the actual and estimated balance sheets attached as Annex 8. The following summary balance sheets presented below show the actual audited data as of the end of the 1967 fiscal year and provisional data as of the end of the 1968 fiscal year.

Ethiopia Electric Light and Power Authority

Summary Fiscal Year End Balance Sheets

(million Eth\$)

<u>ASSETS</u>	<u>1967</u>	<u>Provisional 1968</u>
<u>Fixed Assets</u>		
Fixed assets in operation	111.16	113.31
Less reserve for depreciation	18.98	23.03
Net fixed assets in operation	92.18	90.28
Work in progress	24.29	27.77
Total net fixed assets	116.47	118.05
<u>Cash</u>	4.58	11.75
<u>Other Current Assets</u>	6.72	7.95
TOTAL ASSETS	<u>127.77</u>	<u>137.75</u>
 <u>CAPITAL AND LIABILITIES</u>		
<u>Capital</u>		
Share capital	55.00	55.00
Reserves and surplus	16.59	20.32
Total capital	71.59	75.32
<u>Long-Term Debt</u>	45.85	54.66
<u>Current and other liabilities</u>	10.33 ^{1/}	7.77 ^{2/}
TOTAL CAPITAL AND LIABILITIES	<u>127.77</u>	<u>137.75</u>

^{1/} Includes Eth\$0.07 long-term debt due within one year.

^{2/} Includes Eth\$1.87 long-term debt due within one year.

7.03 Fixed assets are recorded on the basis of an independent evaluation in 1957 when total fixed assets were only Eth\$14.00 million which is very small in relation to subsequent additions which have been recorded at cost. The price level has been relatively stable in Ethiopia in recent years.

7.04 The provisional balance sheet indicates a strong cash position but this arises from delay in construction of projects and cash has been built up in anticipation of the substantial construction program. The Finchaa project is estimated to cost more than 60% of the book value of total fixed assets as of the end of fiscal year 1968. Capital structure is satisfactory with long term debt amounting to 43% of total capitalization. Long term debt was comprised chiefly of Eth\$53.36 million drawn down under Bank Loan 375-EF out of a total loan of Eth\$58.75 million. The remaining debt of EELPA is comprised of Eth\$1.82 million owed to AID and a small remaining balance owed to a supplier.

7.05 Accounts and other receivables as of September 10, 1968 amounted to about Eth\$3 million and bear a reasonable relationship to operating revenues of approximately Eth\$20 million in that year. The figure of Eth\$3 million is net after Eth\$1.6 million provision for doubtful debts of which government debts dating back to 1964 and prior years account for approximately Eth\$0.9 million. This debt was reduced moderately in 1968 and will be discussed with the Government during negotiations.

VIII. PROPOSED FINANCING PLAN

8.01 As shown in the forecast of the source and application of funds (Annex 9) the total expansion program is estimated to be financed through the retention of all earnings, proceeds of the proposed Bank Loan, proceeds of the existing Loan 375-ET which have not yet been fully drawn down, and modest additional borrowing from AID (paragraph 1.02). In addition it is projected that EELPA would make use of bank overdrafts which are expected to be paid off before the close of the forecast period. The following is a summary of the source and application of funds for the years 1969 through 1973:

Ethiopian Electric Light and Power Authority

Summary of Source and Application of Funds Statements
For the Years 1969 through 1973
(in millions of Eth\$)

	<u>Amount</u>	<u>%</u>
<u>APPLICATION OF FUNDS</u>		
Construction expenditures		
Proposed Fincha Project	73.75	63.8
Other construction	<u>41.90</u>	<u>36.2</u>
Total Application of Funds	<u>115.65</u>	<u>100.0</u>
<u>SOURCE OF FUNDS</u>		
Internal cash generation	74.97	
Less: Debt service	<u>34.13</u>	
Net internal cash generation	40.84	35.3
Long-term borrowings ^{1/}		
Proposed IBRD Loan	57.75	50.0
IBRD Loan 375-ET	5.40	4.7
United States - AID	<u>1.00</u>	<u>0.8</u>
Total borrowings	64.15	
Other sources		
Increase in consumers' deposits	1.02	0.9
Decrease in net working capital	<u>9.64</u>	8.3
	10.66	
Total Source of Funds	<u>115.65</u>	<u>100.0</u>

^{1/} Excludes temporary bank overdrafts of up to Eth\$5.00 million which would be drawn down and repaid during the forecast period as mentioned above.

8.02 Construction expenditures on the proposed Finchaa Project are estimated at Eth\$75.75 million of which Eth\$73.75 million will be spent during the period 1969 through 1973. Eth\$2.0 million was spent in 1968. The estimated cost of the foreign portion, Eth\$49.00 million, would be financed by the proposed Bank Loan which will also cover interest during the construction period amounting to Eth\$8.75 million. Net internal cash generation would provide about 35% of the funds required during the period, the proposed and existing Bank loans would provide 55% and the balance of 10% would be provided principally from existing cash balances without jeopardizing EELPA's working capital position. Net internal cash generation would provide 43% of funds required over the years 1969-1974 which period includes an additional year with less heavy construction. As previously mentioned bank overdrafts would be used and paid off during the period.

8.03 For the purpose of the financial forecasts it has been assumed that the proposed Bank Loan would have a 5-year grace period, a 20-year amortization period and interest at the annual rate of 6 1/2%.

8.04 In accordance with the stated policy of EELPA, it has been assumed that no dividends will be payable in the foreseeable future, but the question may be re-examined by EELPA and the Government near the completion date of the project. The Charter of EELPA provides that dividends may be paid "only out of the surplus of net profits remaining after payment of all expenses of operation, segregation of legal and other reserves, allowances for depreciation and amounts necessary for the approved plans of expansion and extension of the business."

8.05 The projections indicate that during the construction period EELPA will temporarily require additional funds. The Authority has arranged for an increase in existing overdraft facilities to Eth\$5.00 million from the Commercial Bank of Ethiopia, a state institution. The rate of interest on overdrafts is currently 9% compared with 7% at the time of consideration of Loan 375-ET.

8.06 The proposed financing plan is reasonable. During negotiations assurances were obtained that the Government, if necessary, will provide EELPA with sufficient funds to complete the Bank project.

IX. ESTIMATED FUTURE OPERATIONS

9.01 Forecast income statements for the 6-year period 1969 through 1974 are included in Annex 7. The basis of the estimates of kwh to be sold are set forth in paragraphs 4.03-4.07 inclusive, and projected power sales are shown in detail in Annex 3. Estimated revenues assume a decline in the average price per kwh reflecting expectations of an increase in average consumption for general customers on two-part tariffs and an increase in the proportion of commercial and industrial sales to total sales.

9.02 With respect to operating expenses, somewhat higher than average increases in operating, administrative and maintenance expenses are shown in the years 1971 and 1974 when new hydroelectric plants are expected to be in operation for a full year. Expenses for fuel and lubricants are expected to decline moderately toward the end of the forecast period due to expansion of the interconnected system to include part of the self contained systems and the related replacement of diesel electric generation with hydro power.

9.03 Depreciation is projected at a 3 1/2% annual straight line rate on plant in service at the end of 1968 plus subsequent additions other than hydroelectric projects. This corresponds closely to past average rates of depreciation. A straight line rate of 2 1/2% is used for the Awash III and Finchaa hydroelectric projects. These rates are reasonable.

9.04 The calculation of income taxes assumes an increase in share capital to Eth\$75 million at the start of the 1970 fiscal year. With such an amount of share capital and existing higher tax rates the first Eth\$562,500 of income is taxed at 20%, the next Eth\$2,250,000 at 30% and the balance at 40% (see paragraph 6.03).

9.05 Operating income after income taxes as a percentage of average net fixed assets in operation is estimated over the period at between 7.1% and 7.8% with a substantially higher ratio of 8.8% in the year 1972 when there is projected practically no increase in average net fixed assets in operation. The related percentages before income tax show a range between 8.8% and 11.3%. This is satisfactory.

9.06 Estimated interest coverage before income taxes ranges generally between 2 1/2 and 3 times. After the relatively high income taxes, the ratio averages 2.1 times. Internal cash generation is expected to cover annual debt service 2.3 times on average.

9.07 Provisions have been continued in the proposed loan agreement that without approval of the Bank, EELPA will not incur any additional long-term debt unless internal cash generation (operating income before depreciation) for the fiscal year preceding such incurrence or for a later 12-month period prior to the incurrence of such debt shall be not less than 1.4 times the maximum debt service requirements for any succeeding fiscal year on all debt, including the debt to be incurred.

9.08 The capital structure of EELPA should remain sound. Long-term debt is now 43% of total capitalization and is projected at 50% at the end of the 1974 fiscal year.

X. CONCLUSIONS

10.01 The project is technically sound and the facilities to be provided are necessary to meet the expected demand for power. The estimated cost is reasonable and the arrangements for engineering, construction and procurement are appropriate. The financing arrangements are satisfactory.

10.02 EELPA is operating satisfactorily and has made good progress in improving staff organization and methods.

10.03 The project would be suitable for a Bank loan of US\$23.1 million equivalent for 25 years including a grace period of 5 years.

April 10, 1969

ETHIOPIATHE ETHIOPIAN ELECTRIC LIGHT ANDPOWER AUTHORITYGeneration FacilitiesInterconnected Systems

<u>Station</u>	<u>Type</u>	<u>Year of Installation</u>	<u>Nameplate Capacity (MW)</u>
Aba Samuel	Hydro	1938	6.6
Ourso	Hydro	1953	0.4
Addis Ababa	Thermal	1956	5.0
Alemaya	Thermal	1957	2.0
Awash I (Koka)	Hydro	1960	43.2
Dire Dawa	Thermal	1966	4.5
Awash II	Hydro	1966	32.0
Awash III	Hydro	1970	32.0
TOTAL			<u>125.7</u>

Self-Contained Systems

<u>Station</u>	<u>Type</u>	<u>Year of Installation</u>	<u>Nameplate Capacity (KVA)</u>
Jimma	Thermal	1958, 60, 66	1,650
	Hydro	1962	175
Dessie	Thermal	1958, 60, 66	1,650
Hagare-Hiwot	Thermal	1967, 68	340
	Hydro	1953	210
Debra Berhane	Thermal	1964, 68	913
	Hydro	1954	110
Ghion	Hydro	1964	185
Gondar	Thermal	1959, 62	937
Yirga Alem	Thermal	1962, 68	585
Debra Marcos	Thermal	1962	250
	Hydro	1964	230
Jijiga	Thermal	1962, 68	335
Neghelli	Thermal	1961, 68, 69	375
Assab	Thermal	1964, 65	2,425
Assella	Thermal	1962, 67, 68	523
Nekemptie	Thermal	1962, 67, 68	523
Shashamane	Thermal	1962, 66	1,300
Axum	Thermal	1965, 66, 68	328
Sodda	Thermal	1966, 67, 68	443
Dilla	Thermal	1966, 68	798
Makalle	Thermal	1966, 68	613
Dembidollo	Hydro	1966	225
Bahr Dar	Hydro	1964	9,600
Asbe Tefferi	Thermal	1967, 68	255
Arba Minch	Thermal	1968	255
Agarro	Thermal	1968	188
TOTAL			<u>25,421</u>

ETHIOPIA

ETHIOPIAN ELECTRIC LIGHT AND POWER AUTHORITY

Project Cost Estimate

	Thousands of Eth\$			Thousands of US\$		
	Local	Foreign	Total	Local	Foreign	Total
<u>FINCHAA HYDROELECTRIC STATION</u>						
<u>Civil Works</u>						
Access Roads and Operators Village	6,200	-	6,200	2,480	-	2,480
Road, Dam to Powerhouse	1,903	4,240	6,143	761	1,696	2,457
Reservoir and Dam	1,566	1,990	3,556	626	796	1,422
Intake	290	525	815	116	210	326
Tunnel and Penstock	4,210	11,325	15,535	1,684	4,530	6,214
Powerhouse Structure	2,072	3,295	5,367	829	1,318	2,147
	<u>16,241</u>	<u>21,375</u>	<u>37,616</u>	<u>6,496</u>	<u>8,550</u>	<u>15,046</u>
<u>Equipment</u>						
Turbines	125	3,675	3,800	50	1,470	1,520
Generators	375	2,850	3,225	150	1,140	1,290
Electrical Equipment	346	1,094	1,440	138	438	576
Mechanical Equipment	338	1,184	1,522	136	472	608
	<u>1,184</u>	<u>8,803</u>	<u>9,987</u>	<u>474</u>	<u>3,520</u>	<u>3,994</u>
Engineering and other Services	2,875 ^{1/}	2,622	5,497	1,150 ^{1/}	1,050	2,200
Contingencies	<u>2,700</u>	<u>4,075</u>	<u>6,775</u>	<u>1,080</u>	<u>1,630</u>	<u>2,710</u>
TOTAL - FINCHAA	<u>23,000</u>	<u>36,875</u>	<u>59,875</u>	<u>9,200</u>	<u>14,750</u>	<u>23,950</u>
<u>TRANSMISSION</u>						
Switching Station	118	2,255	2,373	47	902	949
Transmission Line	2,630	7,050	9,680	1,052	2,820	3,872
Substation	191	820	1,011	76	328	404
Engineering	322 ^{1/}	875	1,197	130 ^{1/}	350	480
Contingencies	<u>439</u>	<u>1,125</u>	<u>1,564</u>	<u>195</u>	<u>450</u>	<u>645</u>
TOTAL - TRANSMISSION	<u>3,700</u>	<u>12,125</u>	<u>15,825</u>	<u>1,500</u>	<u>4,850</u>	<u>6,350</u>
TOTAL - PROJECT	<u>26,700</u>	<u>49,000</u>	<u>75,700</u>	<u>10,700</u>	<u>19,600</u>	<u>30,300</u>

^{1/} The local cost of engineering services includes the amounts to be disbursed by AID for engineering prior to signing of the proposed Loan.

March 21, 1969

ETHIOPIA

ETHIOPIAN ELECTRIC LIGHT AND POWER AUTHORITY

S u m m a r y

Actual and Forecast Energy Sales 1964 - 1974
(millions of kwh)

	<u>INTERCONNECTED SYSTEM</u>			<u>SELF-CONTAINED SYSTEMS</u>			<u>TOTAL</u>	
	<u>kwh</u>	<u>% In-crease</u>	<u>% of Total Sales</u>	<u>kwh</u>	<u>% In-crease</u>	<u>% of Total Sales</u>	<u>kwh</u>	<u>% In-crease</u>
<u>A C T U A L</u>								
1964	107.79	19.7	86.5	16.83	137.0	13.5	124.62	28.3
1965	125.97	16.9	82.7	26.30	56.3	17.3	152.27	22.2
1966	134.98	7.2	81.2	31.34	19.2	18.8	166.32	9.2
1967	162.20	20.2	82.0	35.70	13.9	18.0	197.90	19.0
1968	181.81	12.1	82.2	39.32	10.1	17.8	221.13	11.7
<u>F O R E C A S T</u>								
1969	205.0	12.8	85.8	34.0	(13.5)	14.2 ^{1/}	239.0	8.1
1970	239.0	16.6	85.7	40.0	17.6	14.3	279.0	16.7
1971	283.0	18.4	85.8	47.0	17.5	14.2	330.0	18.3
1972	330.0	16.6	85.5	56.0	19.1	14.5	386.0	17.0
1973	380.0	15.2	85.1	66.5	18.8	14.9	446.5	15.7
1974	438.0	15.3	84.7	79.0	18.8	15.3	517.0	15.8

^{1/} Reduction in sales due to discontinuance of sales of off-peak power on self-contained systems in 1969.

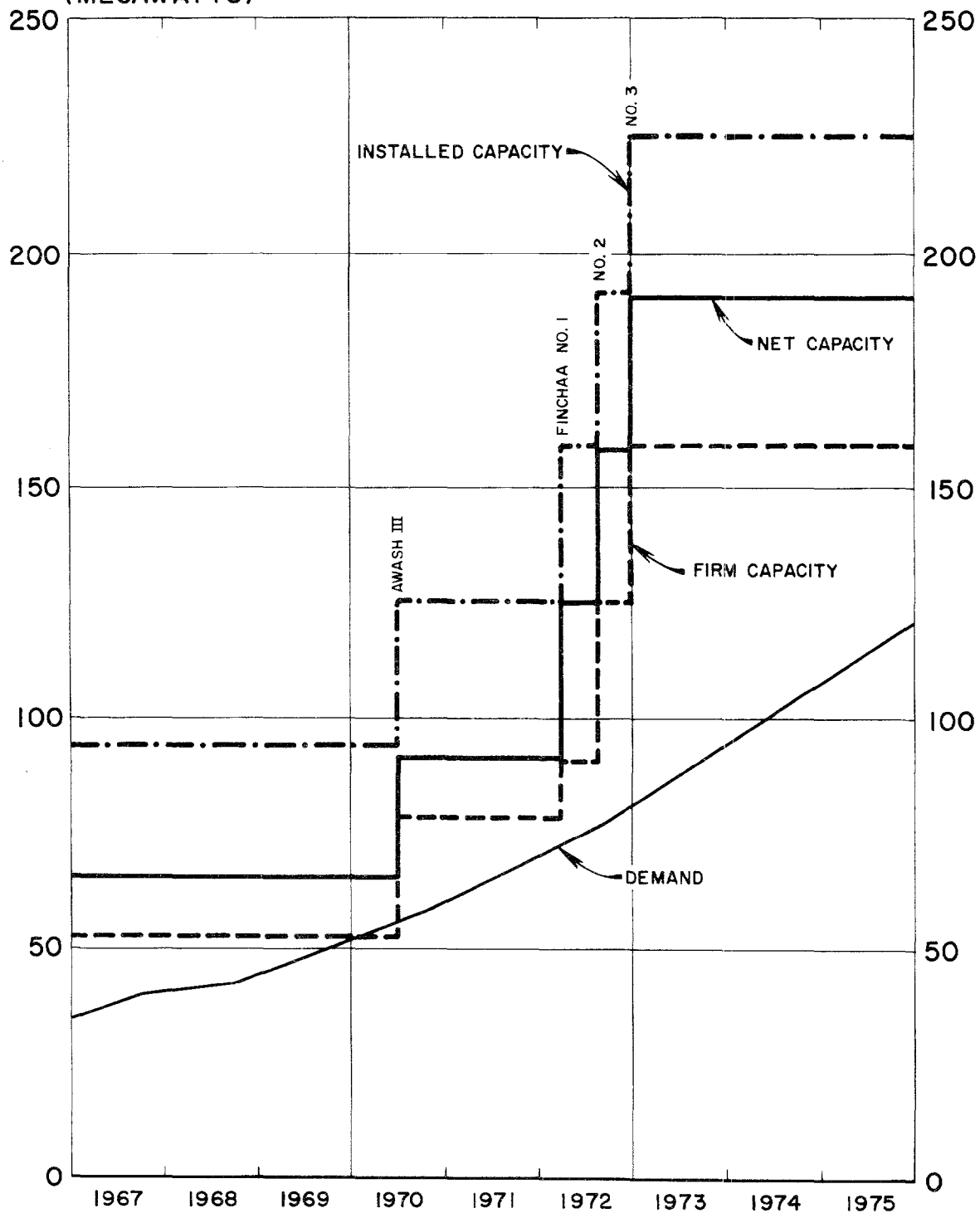
ETHIOPIA

ETHIOPIAN ELECTRIC LIGHT AND POWER AUTHORITY

Actual and Forecast Sales 1964 - 1974
(millions of kwh)

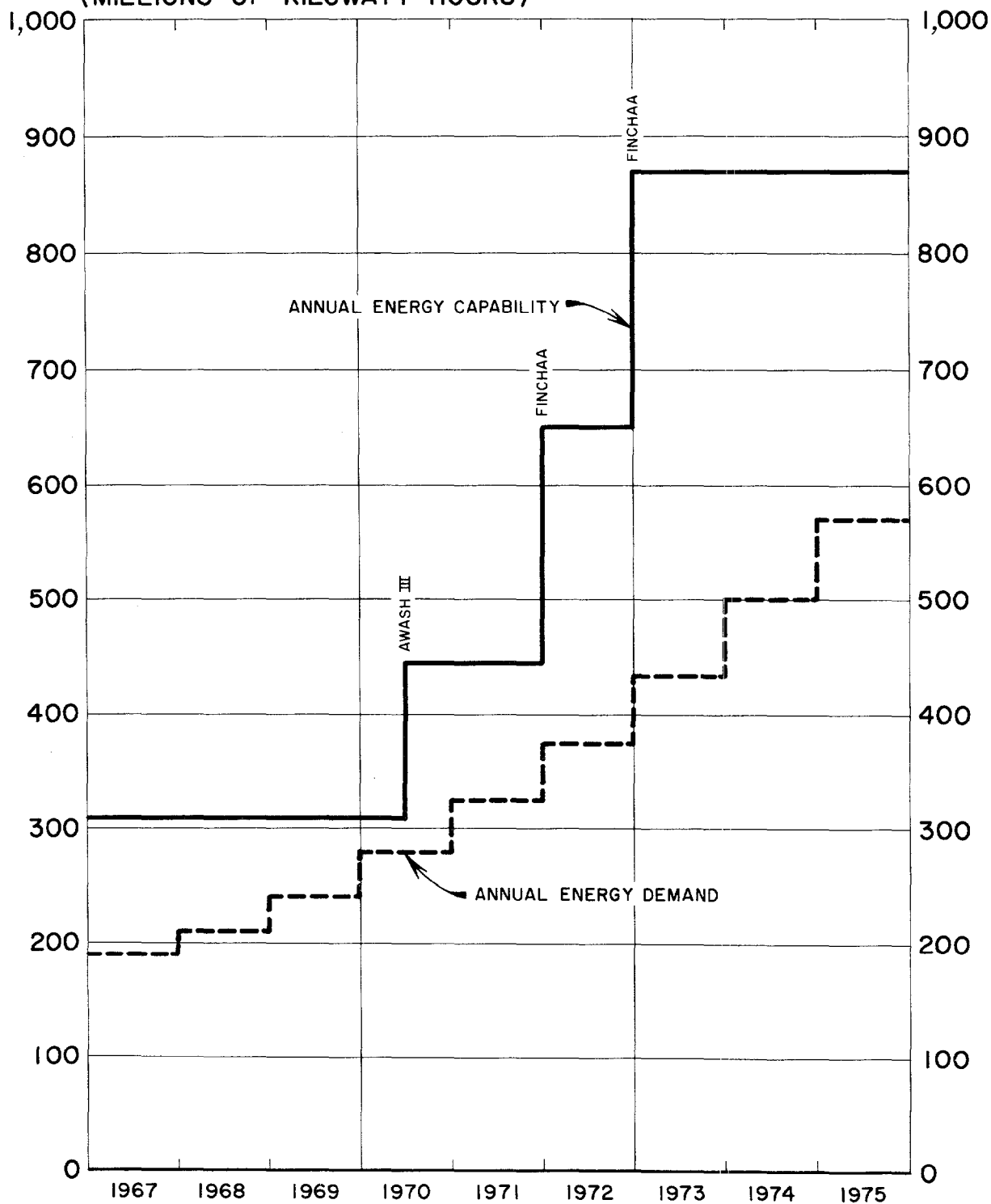
	<u>General</u>			<u>Commercial and Industrial</u>			<u>Public Lighting</u>			<u>Off-Peak</u>		<u>Total</u>		
	<u>kwh</u>	<u>% Incr.</u>	<u>% of Total</u>	<u>kwh</u>	<u>% Incr.</u>	<u>% of Total</u>	<u>kwh</u>	<u>% Incr.</u>	<u>% of Total</u>	<u>kwh</u>	<u>% of Total</u>	<u>kwh</u>	<u>% Incr.</u>	<u>% of Total</u>
<u>INTERCONNECTED SYSTEM</u>														
<u>A C T U A L</u>														
1964	40.84	15.0	32.8	47.24	19.4	37.9	2.22	15.0	1.8	17.49	14.0	107.79	19.7	86.5
1965	46.17	13.1	30.3	65.14	37.9	42.8	2.31	4.1	1.5	12.35	8.1	125.97	16.9	82.7
1966	52.23	13.1	31.4	77.81	19.5	46.8	2.58	11.7	1.6	2.36	1.4	134.98	7.2	81.2
1967	60.28	15.4	30.5	94.10	20.9	47.5	2.83	9.7	1.4	4.99	2.6	162.20	20.2	82.0
1968	68.56	13.7	31.0	103.51	10.0	46.8	3.17	12.0	1.4	6.57	3.0	181.81	12.1	82.2
<u>F O R E C A S T</u>														
1969	78.16	14.0	32.7	118.32	14.3	49.5	3.52	11.0	1.5	5.0	2.1	205.0	12.8	85.8
1970	89.88	15.0	32.2	140.21	18.5	50.3	3.91	11.0	1.4	5.0	1.8	239.0	16.6	85.7
1971	102.91	14.5	31.2	170.75	21.8	51.8	4.34	11.0	1.3	5.0	1.5	283.0	18.4	85.8
1972	117.32	14.0	30.4	202.86	18.8	52.6	4.82	11.0	1.2	5.0	1.3	330.0	16.6	85.5
1973	133.74	14.0	30.0	235.91	16.3	52.8	5.35	11.0	1.2	5.0	1.1	380.0	15.2	85.1
1974	152.46	14.0	29.5	274.60	16.4	53.1	5.94	11.0	1.1	5.0	1.0	438.0	15.3	84.7
<u>SELF-CONTAINED SYSTEMS</u>														
<u>A C T U A L</u>														
1964	7.08	44.8	5.7	4.35	148.0	3.5	.56	21.7	0.4	4.84	3.9	16.83	137.0	13.5
1965	8.03	13.4	5.3	8.26	89.9	5.4	.65	16.1	0.4	9.36	6.2	26.30	56.3	17.3
1966	9.41	17.2	5.7	11.98	45.2	7.2	.86	32.3	0.5	9.09	5.4	31.34	19.2	18.8
1967	12.04	27.9	6.1	11.80	(1.6)	5.9	1.04	20.9	0.5	10.82	5.5	35.70	13.9	18.0
1968	14.60	21.3	6.6	12.91	9.4	5.8	1.31	26.0	0.6	10.50	4.8	39.32	10.1	17.8
<u>F O R E C A S T</u>														
1969	18.23	24.9	7.6	14.20	10.0	5.9	1.57	20.0	0.7	--	--	34.0	(13.5)	14.2
1970	22.48	23.3	8.0	15.62	10.0	5.6	1.90	21.0	0.7	--	--	40.0	17.6	14.3
1971	27.50	22.3	8.3	17.18	10.0	5.2	2.32	22.0	0.7	--	--	47.0	17.5	14.2
1972	34.27	24.6	8.9	18.90	10.0	4.9	2.83	22.0	0.7	--	--	56.0	19.1	14.5
1973	42.26	23.3	9.4	20.79	10.0	4.7	3.45	22.0	0.8	--	--	66.5	18.8	14.9
1974	51.92	22.9	10.1	22.87	10.0	4.4	4.21	22.0	0.8	--	--	79.0	18.8	15.3

**ETHIOPIA: ETHIOPIAN ELECTRIC LIGHT AND
POWER AUTHORITY
INTERCONNECTED SYSTEM
SYSTEM CAPACITY AND DEMAND
(MEGAWATTS)**



NOTES: Net Capacity - Installed capacity adjusted for loss in output during dry years.
Firm Capacity - Net capacity less provision for maintenance and outages.
System Demand - Estimated load demand plus losses.

**ETHIOPIA: ETHIOPIAN ELECTRIC LIGHT AND
POWER AUTHORITY
INTERCONNECTED SYSTEM
ENERGY CAPABILITY AND ENERGY DEMAND
(MILLIONS OF KILOWATT HOURS)**



NOTES: Annual Energy Capability - System energy capability, driest year.
Annual Energy Demand - Estimated energy sales plus losses.

ETHIOPIA

THE ETHIOPIAN ELECTRIC LIGHT AND

POWER AUTHORITY

Rate of Return on the Project

1. The rate of return of the Finchaa project is taken for the purpose of this calculation to be the discount rate at which the present worth of the cost of the project equals the present worth of the net revenue deriving from it over its life.

2. The following information and assumptions were used in calculating the rate of return:

- a. To the capital cost of the project has been added the cost of transmission/distribution facilities which would be provided to distribute the output of Finchaa. A project life of 40 years is assumed.
- b. Annual net revenue equal to annual gross revenue less operating costs. Annual gross revenue is equal to the annual kwh sales attributed to Finchaa multiplied by the applicable tariff. For the purpose of calculating the rate of return, operating costs exclude the income tax levy on profits. That is, net revenue is the revenue before income taxes are applied since income taxes are a direct benefit to the economy, and constitute an internal transfer in the economy of the country.
- c. It is estimated that it would be 1978-79 before the full energy output of Finchaa would be utilized. Annual kwh sales applicable to Finchaa in the 1973-79 period are based on its estimated contribution to sales each year.
- d. It is assumed that the average revenue per kwh from Finchaa would be US 3.2 cents per kwh in the period 1973-79 and US 2.4 cents thereafter. The former corresponds to the average price which would apply about 1974, and which is slightly less than the average in the 1970-74 period. However, it is expected that as the Finchaa output becomes absorbed into the system the benefits of the comparatively low cost power produced from it would be reflected in some reduction in tariffs. The tariff assumed starting in 1980 is based on this premise. This is admittedly an arbitrary assumption. The ultimate tariff is not likely to be less than 2.4 US cents. If it should prove higher, the revenue and consequently the rate of return, would be larger.

- e. Gross operating expenses include the incremental costs of operation applicable to Finchaa as well as the cost of operating and distribution facilities over which Finchaa production would be distributed.

3. The rate of return is estimated at 19%. The assumptions are on the conservative side and the figure of 19% can likewise be assumed conservative. Moreover, it is reasonable to believe that the real worth of the output from Finchaa to the economy is somewhat higher than the rates charged by EELPA.

4. There is no real capital market in Ethiopia from which the opportunity cost of capital can be ascertained. However, the various forms of loans and credit available, including commercial bank loans for periods up to five years, saving association lendings, government bonds, and bank overdrafts all bear interest rates in the range of 6.5 - 9.5%. It is therefore probable that the rate of return of 19% on Finchaa is substantially greater than the opportunity cost of capital in Ethiopia.

ETHIOPIA

ETHIOPIAN ELECTRIC LIGHT AND POWER AUTHORITY

Rate of Return of Project

	<u>Capital Expenditure Millions US\$</u>	<u>Annual Sales, Finchaa Millions kwh</u>	<u>Annual Revenue, Finchaa Millions US\$</u>	<u>Annual Operating Expenses Finchaa Millions US\$</u>	<u>Annual Net Revenue, Finchaa Millions US\$</u>
1973	36.9 1/	30	0.70	0.70	-
1974	1.2 2/	60	1.92	0.75	1.17
1975	1.2	130	4.15	0.80	3.35
1976	1.2	210	6.72	0.85	5.87
1977	1.2	300	9.60	0.90	8.70
1978	1.2	390	12.50	0.95	11.55
1979	1.2	430	13.80	1.00	12.80
1980	1.2	530	12.70	1.05	11.65
1981	-	530	12.70	1.05	11.65
1982	-	530	12.70	1.05	11.65
"	"	"	"	"	"
"	"	"	"	"	"
"	"	"	"	"	"
2013	-	530	12.70	1.05	11.65
Present Worth 1973, Discount Rate 19.3%	41.9				41.9

1/ Includes cost of Finchaa and distribution capital expenditures, and interest charges during construction period thereon.

2/ Annual expenditure on distribution for Finchaa estimated US\$1.2 million until 1980.

February 3, 1969

ETHIOPIA
ETHIOPIAN ELECTRIC LIGHT AND POWER AUTHORITY

Actual and Estimated Income Statements
(in millions of Ethiopian Dollars)

<u>Year Ending September 10</u>	<u>Actual</u>			<u>Provisional</u>	<u>Estimated</u>					
	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
Sales (millions of kwh)	152.3	166.3	197.9	221.1	239.0	279.0	330.0	386.0	446.5	517.0
Average price per kwh (Eth. cents)	<u>8.84</u>	<u>9.15</u>	<u>8.94</u>	<u>9.06</u>	<u>9.10</u>	<u>8.89</u>	<u>8.79</u>	<u>8.58</u>	<u>8.40</u>	<u>8.16</u>
<u>Operating Revenues</u>	<u>13.47</u>	<u>15.21</u>	<u>17.70</u>	<u>20.03</u>	<u>21.80</u>	<u>24.80</u>	<u>29.00</u>	<u>33.10</u>	<u>37.50</u>	<u>42.20</u>
<u>Operating Expenses</u>										
Operating, administrative and maintenance expenses	4.62	5.36	5.77	6.75	7.90	8.70	9.80	10.70	11.40	12.30
Fuel and lubricants	1.54	2.22	1.15	0.95	1.35	1.82	1.91	2.06	1.95	1.80
Depreciation	2.40	2.55	3.44	3.80	4.06	4.68	5.35	5.64	6.84	8.04
Income taxes	1.26	1.10	1.57	2.00	1.85	1.92	2.54	3.28	4.05	5.07
Total operating expenses	<u>9.82</u>	<u>11.23</u>	<u>11.93</u>	<u>13.50</u>	<u>15.16</u>	<u>17.12</u>	<u>19.60</u>	<u>21.68</u>	<u>24.24</u>	<u>27.21</u>
<u>Operating Income</u>	3.65	3.98	5.77	6.53	6.64	7.68	9.40	11.42	13.26	14.99
<u>Interest Charges - Annex 9</u>	<u>0.67</u>	<u>1.35</u>	<u>2.19</u>	<u>2.80</u>	<u>3.15</u>	<u>3.95</u>	<u>4.72</u>	<u>5.64</u>	<u>6.32</u>	<u>6.53</u>
<u>Net Income</u>	<u>2.98</u>	<u>2.63</u>	<u>3.58</u>	<u>3.73</u>	<u>3.49</u>	<u>3.73</u>	<u>4.68</u>	<u>5.78</u>	<u>6.94</u>	<u>8.46</u>
<u>Times interest charges covered by operating income</u>										
before income taxes	7.3	3.8	3.4	3.0	2.7	2.4	2.5	2.6	2.7	3.1
after income taxes	5.4	2.9	2.6	2.3	2.1	1.9	2.0	2.0	2.1	2.3
<u>Operating income - % of average net fixed assets in operation</u>										
before income taxes	8.7	8.8	9.7	9.3	9.3	8.8	9.4	11.3	10.2	9.7
after income taxes	6.4	6.9	7.6	7.2	7.3	7.1	7.4	8.8	7.8	7.2

March 21, 1969

ETHIOPIA
ETHIOPIAN ELECTRIC LIGHT AND POWER AUTHORITY

Actual and Estimated Balance Sheets
(in millions of Ethiopian Dollars)

September 10	Actual			Provisional		Estimated				
	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
ASSETS										
Fixed Assets										
Fixed assets in operation (a)	69.10	73.84	111.16	113.31	115.81	157.48	166.23	173.73	256.73	294.23
Less reserve for depreciation	12.70	15.00	18.98	23.03	27.09	31.77	37.12	42.76	49.60	57.64
Net fixed assets in operation	56.40	58.84	92.18	90.28	91.72	125.71	129.11	130.97	207.13	206.59
Work in progress	19.15	41.81	24.29	27.77	38.27	25.50	48.00	67.86	-	5.00
Total net fixed assets	75.55	100.65	116.47	118.05	129.99	151.21	177.11	198.47	207.13	211.59
Current Assets										
Cash	4.75	1.88	4.58	11.75	7.78	0.57	(4.51)	(11.42)	0.49	1.87
Accounts receivable and prepayments	3.44	4.16	3.43	4.68	5.00	5.50	6.20	6.90	7.60	8.40
Materials and supplies	2.74	2.80	3.29	3.27	3.50	4.00	4.30	4.60	5.50	5.90
Total current assets	10.93	8.84	11.30	19.70	16.28	10.07	5.99	7.08	13.59	16.17
Total assets	86.48	109.49	127.77	137.75	146.27	161.28	183.10	205.55	220.72	227.76
CAPITAL AND LIABILITIES										
Capital										
Share capital	55.00	55.00	55.00	55.00	55.00	75.00	75.00	75.00	75.00	75.00
Reserves and surplus	11.28	13.91	16.59	20.32	23.81	7.54	12.22	18.00	21.94	33.40
Total capital	66.28	68.91	71.59	75.32	78.81	82.54	87.22	93.00	99.94	108.40
Long-term Debt										
English Electric	0.12	0.04	-	-	-	-	-	-	-	-
INBRA, Yugoslavia	11.55	1.49	1.42	1.35	1.08	0.61	0.54	0.27	-	-
IBRD Loan No. 375-ET	12.81	31.45	44.50	53.36	55.26	55.46	53.66	51.76	49.76	47.66
Proposed IBRD Loan	-	-	-	-	1.65	12.53	30.72	48.42	57.75	57.01
United States - AID	-	-	-	1.82	2.82	2.82	2.82	2.82	2.82	2.82
Total Long-term Debt	14.48	32.98	45.92	56.53	60.81	71.62	87.74	103.27	110.33	107.49
Less debt due within one year	0.14	0.11	0.07	1.87	1.97	2.07	2.17	2.27	2.84	3.77
Net Long-term Debt	14.34	32.87	45.85	54.66	58.84	69.55	85.57	101.00	107.49	103.72
Consumers' Deposits	2.11	2.40	2.65	2.98	3.20	3.40	3.60	3.80	4.00	4.20
Current Liabilities										
Long-term debt due within one year	0.14	0.11	0.07	1.87	1.97	2.07	2.17	2.27	2.84	3.77
Accounts payable and accruals	2.29	4.35	6.04	1.42	1.60	1.80	2.00	2.20	2.40	2.60
Provision for taxes	1.32	0.85	1.57	1.50	1.85	1.92	2.54	3.28	4.05	5.07
Total current liabilities	3.75	5.31	7.68	4.79	5.42	5.79	6.71	7.75	9.29	11.44
Total Liabilities	86.48	109.49	127.77	137.75	146.27	161.28	183.10	205.55	220.72	227.76
Debt/Equity Ratio	18/82	32/68	39/61	43/54	44/56	46/54	50/50	53/47	52/48	50/50
Percentage of long-term debt including long-term debt due within one year to total net fixed assets	19%	33%	39%	43%	47%	47%	50%	52%	53%	51%

(a) At independent valuation in 1957 and subsequent additions at cost.

ETHIOPIAN ELECTRIC LIGHT AND POWER AUTHORITY

Estimated Source and Application of Funds Statements
(in millions of Ethiopian Dollars)

Year Ending September 10	1969	1970	1971	1972	1973	1974	Six-Year Total 1969-1974
SOURCE OF FUNDS							
Internal Cash Generation							
Operating income	6.64	7.66	9.40	11.42	13.26	14.99	63.39
Depreciation	4.06	4.68	5.35	5.64	6.84	8.04	34.61
Total internal cash generation	10.70	12.36	14.75	17.06	20.10	23.03	98.00
Increase in consumers' deposits	0.22	0.20	0.20	0.20	0.20	0.20	1.22
Borrowings							
IBRD Loan No. 375-ET	3.50	1.90	-	-	-	-	5.40
Proposed IBRD Loan (Finchaa)	1.65	10.88	18.19	17.70	9.33	-	57.75
United States - AID	1.00	-	-	-	-	-	1.00
Total borrowings	6.15	12.78	18.19	17.70	9.33	-	64.15
Total Source of Funds	17.07	25.34	33.14	34.96	29.63	23.23	163.37
APPLICATION OF FUNDS							
Construction Expenditures (No interest during construction)							
Proposed IBRD Finchaa Project							
Foreign	1.50	10.00	16.50	15.00	6.00	-	49.00
Local	5.50	6.50	6.00	4.50	2.25	-	24.75
Total	7.00	16.50	22.50	19.50	8.25	-	73.75
Interconnected System	1.50	2.75	4.00	2.75	3.00	2.86	16.88
Self-contained Systems-Miscellaneous	4.00	4.75	4.75	4.75	4.25	4.62	7.12
IBRD Loan 375-ET Project							
Foreign	3.50	1.90	-	-	-	-	5.40
Future Hydro Project	-	-	-	-	-	5.00	5.00
Total Construction Expenditures	16.00	25.90	31.25	27.00	15.50	12.50	128.15
Debt Service							
Interest							
INGRA, Yugoslavia (3% rate)	0.04	0.03	0.02	0.01	0.01	-	0.11
IBRD Loan No. 375-ET (5% rate)	2.96	3.04	3.01	2.93	2.82	2.71	17.47
Proposed IBRD Loan	0.15	0.88	1.69	2.70	3.49	3.82	12.73
Total interest	3.15	3.95	4.72	5.64	6.32	6.53	30.31
Amortization							
INGRA, Yugoslavia	0.27	0.27	0.27	0.27	0.27	-	1.35
IBRD Loan No. 375-ET	1.60	1.70	1.60	1.90	2.00	2.10	11.10
Proposed IBRD Loan	-	-	-	-	-	0.74	0.74
Total amortization	1.87	1.97	2.07	2.17	2.27	2.84	13.19
Total Debt Service	5.02	5.92	6.79	7.81	8.59	9.37	43.50
Increase or (Decrease) in Net Working Capital excluding cash							
Accounts receivable and prepayments	0.32	0.50	0.70	0.70	0.70	0.80	
Materials and supplies	0.23	0.50	0.30	0.30	0.90	0.40	
Accounts payable and accruals	(0.18)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	
Provision for taxes	(0.35)	(0.07)	(0.62)	(0.74)	(0.77)	(1.02)	
Total increase or (decrease) in net working capital	0.02	0.73	0.18	0.06	0.63	(0.02)	1.60
Total Application of Funds	21.04	32.55	36.22	34.87	24.72	21.85	173.25
Net Cash Accrual or (Deficit)	(3.97)	(7.21)	(5.08)	0.09	4.91	1.38	(9.88)
Cash Balance Beginning of Year	11.75	7.78	0.57	(4.51)	(4.42)	0.49	
Cash Balance End of Year 1/	7.78	0.57	(4.51)	(4.42)	0.49	1.87	
Times annual debt service covered by internal cash generation	2.1	2.1	2.2	2.2	2.3	2.5	2.3

1/ Year end cash deficits will be covered by overdraft arrangements (See paragraphs 8.01 and 8.15)

March 21, 1969



MEMORANDUM ON RECENT ECONOMIC DEVELOPMENTS IN ETHIOPIA

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I. INTRODUCTION

1. Ethiopia is still at a very early stage of economic and social development. Per capita income is approximately Eth\$ 150 (US\$ 60)* per year, one of the lowest among developing countries and the economy is based largely upon subsistence agriculture. Coffee is the major cash crop and the source of more than half of Ethiopia's export earnings. A few larger commercial plantations have provided the basis for some import-substituting industries such as sugar and cotton and provide some other agricultural exports such as oilseeds, fruits and vegetables.

2. From 1960 until 1966 the economy grew at a rate of 4.6% per year, largely as a result of a relatively rapid expansion of the non-agricultural sectors. The growth rate of agriculture, however, was only 2.1%, approximately the same as that of the population. The Government's development strategy had been to build up the public services, mainly roads and power, and to establish some import substitution industries. There has been relatively little development in agriculture which provided 90% of employment, two-thirds of GDP and almost all exports.

3. The Government has traditionally followed conservative monetary and fiscal policies. Throughout most of the post-war period there have been surpluses on the current budget and in the overall balance of payments so that foreign exchange reserves have been accumulated and generally maintained at comfortable levels. However, over the last two or three years the position of the current budget deteriorated and the Government encountered an acute liquidity problem early this year. A number of measures have been taken to alleviate the Government's cash position but in the longer run the Government will have to deal with the underlying causes which brought about the present difficulties. These developments are discussed in more detail later in this memorandum.

II. RECENT DEVELOPMENTS - THE GROWTH OF GDP

4. From 1965/66 to 1967/68 gross domestic product increased by 4.3% compared to 4.6% in the preceding five years. This slowdown was the result of a fall in the rate of growth of the monetary sector of the economy from an average rate of 7.6% in the preceding five years to 6.5% in the last two years. (Table 1).

5. The agricultural sector has, however, shown a marked improvement, increasing its rate of growth from 2.1% to 2.8%. The downward tendency of food grain prices in the urban areas proves that the agricultural sector has produced enough marketable surplus to feed the growing urban population since there was little import of food grain in this period. Generally favorable weather largely accounts for the better agricultural production, but the development of private commercial agriculture in the low-lying northwestern provinces bordering the Sudan has also contributed to the increased output.

* US \$1 = Eth. \$2.5

6. While the manufacturing sector maintained a fairly rapid growth rate of about 15%, the rate of growth of the handicrafts and small industries, which are more important than manufacturing proper, declined significantly. The sharpest decline was that of building and construction which fell from 11.5% to 5%. Similarly, the growth rate of commerce, transport and communications fell from 9.7% to 4.8%. The recession in the monetary sector of the economy was largely due to a decline in Ethiopia's foreign trade. Export earnings, which were rising at an annual rate of 9%, showed actual declines after 1965 owing to a fall in the price of coffee and, after 1967, they were adversely affected by the closure of the Suez Canal.

III. PUBLIC FINANCE

7. Until about three years ago the Government's fiscal situation was generally good. The current budget produced a surplus and revenue was tending to rise somewhat faster than expenditure. Public savings were able to finance about 60% of the capital budget over the period 1963/64 to 1965/66. During the last three years, the situation has gradually become more difficult. Revenues became less buoyant largely because external trade was depressed owing to a fall in coffee prices but also because certain changes in the tax system which the Government introduced in an effort to increase revenue did not prove as successful as was expected. At the same time current expenditure increased at the same rate, or even somewhat faster, as the rising cost of education, health and other social services was supplemented by growing expenditures on defense and internal security.

8. In 1966/67 the effect of these developments was hidden by certain receipts of a once for all nature, such as improved collection of tax arrears on business enterprises and a change in the method of collecting the tax on sugar. These windfalls prevented any increase in the budget deficit although the overall Treasury deficit increased from Eth\$ 7 million to Eth\$ 15 million as a result of lower receipts from foreign loans. In 1967/68 current expenditure continued to increase at almost the same rate as the previous year owing to a sharp increase in expenditure on defense and education; expenditure for economic services did not increase at all. However, for the first time in many years, the increase in expenditure was not matched by any increase in revenue; consequently both the budget deficit and the Treasury deficit grew substantially and the Government was left with unpaid bills at the end of the year. The failure of revenue to increase was partly the result of the continued mild recession in the economy which was in turn due to the absence of any revival of external trade. However, the Government also introduced some changes in the income tax legislation. An agricultural income tax was introduced to replace the age-old "tithe" system and the income tax was increased in the higher income brackets. But the yield of the new agricultural income tax only partly offset the loss of the "tithe" and the revenue from the higher income tax rates did not come up to expectations.

9. By the end of 1967/68 the Treasury deficit was Eth\$ 45.4 million which was three times that of the previous year and about six times the average figure for the early 1960's (Table 4). The original budget for 1968/69 was

therefore based upon the assumption that a number of new tax measures would be introduced which, together with the trend increase, were intended to increase total current revenue by 24%. However, the new measures were not implemented so that the actual revenue increase is more likely to be around 10%. At the same time current expenditure continued to increase mainly as a result of higher salaries paid to the Army and to teachers. With expenditure rising more rapidly than revenue and with the legal limit on Central Bank borrowing reached the Government was forced to make severe cuts in expenditure and work on a number of development projects had to be stopped or slowed down. In an effort to meet this situation the Government has obtained parliamentary approval for an issue of Treasury Bills which will ease the cash situation and has also introduced a revised budget.

10. Although the cash difficulties which the Government encountered came in 1968/69, the budgetary outcome this year will probably be better than that of 1967/68. The short-term problem arose because of the rigidities of the monetary system and can be overcome by introducing more flexibility into the regulations controlling Government borrowing from the Central Bank. This the Government proposes to do, following certain proposals put forward by a mission from the IMF, although the situation in 1969/70 is likely to remain somewhat difficult. There is, however, also a long-term aspect to the Ethiopian budget problem since rising current expenditures are pressing against revenues which will be less buoyant than before unless exports, which are heavily dependent on coffee, grow more rapidly than is now expected. This is one of the important economic problems facing the new Government which was formed in February this year.

11. Throughout the last three years the Government's capital expenditure has remained fairly stable although expenditure on economic development has declined slightly while expenditure on health and education has increased. The continuation of an adequate volume of capital expenditure in the future will obviously depend upon satisfactory measures being taken to restore the fiscal situation and the level of public savings.

IV. BALANCE OF PAYMENTS

12. In 1966, for the first time in the 1960's Ethiopia's balance of payments closed with an overall deficit (Table 5). In 1964 and 1965 there were relatively large surpluses amounting to Eth\$ 27 and Eth\$ 34 million respectively. The deficit in 1966 was small, Eth\$ 8 million, but became much larger in 1967 amounting to Eth\$ 44 million. In 1968, however, there was a surplus of Eth\$ 8 million.

13. The change from surplus to deficit in 1966 was brought about in the first instance by a fall in coffee prices; export earnings from coffee declined from Eth\$ 188 million in 1965 to Eth\$ 156 million in 1966, and further to Eth\$ 139 million in 1967 (Table 6). In addition to lower prices, the volume of coffee exports was also reduced because the traders held back

stocks in anticipation of a price recovery. When coffee earnings were at their lowest the closure of the Suez Canal in June of that year adversely affected the exports of most other products, such as hides and skins, oil-seed cakes and pulses, which had been showing an increasing trend. A substantial decline in capital inflows added to the problem and led to a large overall deficit in 1967.

14. Ethiopia's imports increased rapidly until 1965 mainly as a result of rising imports of machinery and transport equipment. In 1967, however, total imports declined owing to the reduction in economic activity resulting from the decline in export earnings and the dislocation caused by the closure of the Suez Canal. Imports of some consumer goods, such as textiles, sugar and shoes, declined as a result of the establishment of domestic industries.

15. In 1968, export earnings recovered to Eth\$266 million from the low level of Eth\$250 million in 1967, but were still lower than the earnings of 1965 and 1966. This recovery was almost entirely due to coffee (Eth\$153 million)--there was a slight price recovery and export volume increased substantially--earnings from most other exports declined further on account of the continued closure of the Suez Canal. Despite higher export earnings, there was a record trade deficit (Eth\$ 158 million) because of imports to replenish depleted stocks and the purchase of two jetliners costing about Eth\$ 40 million. The surplus balance of payments was made possible by a substantial improvement in the services account, transfer receipts and capital inflows. The significant improvement in the services account was mainly due to higher receipts from travel and transportation, indicating the growing importance of tourism. The inflow of public capital showed a particularly high figure because it included a greater part of the financing of the two jetliners bought in that year.

16. The net foreign assets of the banking system stood at Eth\$ 214 million at the end of 1965, but declined to Eth\$ 171 million by the end of 1968. For Ethiopia the year-end reserves are normally low, because the coffee export season starts at that time. However, the reserves at the end of 1968 were equivalent to more than five months' imports.

V. THE PROSPECTS FOR FUTURE DEVELOPMENT

17. The immediate problem that faces the Ethiopian Government is the current budgetary position and some important cuts in current expenditure for 1969/70 have already been proposed. While the relatively high foreign reserves and a revision of the banking law permitting the Government to have recourse to a larger amount of central bank borrowing provide some time for Government to overcome its immediate cash problems, it will be necessary to restore the volume of public saving, without which the Government will be unable to carry out a desirable public investment program. In the long run, this will be much easier if measures can be taken to increase export earnings.

18. An important potential new export resource is the potash deposit in Dalol. The Ralph M. Parsons Company, which had held a concession in this area for ten years, relinquished it in 1968, and the Government has recently awarded a new concession to Kaiser/Ludwig Group. However, production is not expected to start before 1975 so that there will be no immediate benefits to the economy from this project. The preparation and execution of quick-yielding, export-oriented agricultural projects is therefore of high economic priority. There is some scope for producing and exporting greater quantities of oilseeds (sesame) and earnings from hides and skins and coffee could be increased by improving their quality.

19. In the longer run, Ethiopia's development prospects will depend upon the degree to which it can encourage the development of the directly productive sectors of the economy, particularly agriculture and mining. Ethiopia has considerable fertile land which could be brought under irrigation, and the yields of the rain-fed agriculture could be increased through improved techniques. Commercial agriculture can be developed in a reasonably short time in the Awash Valley, particularly in the middle valley area. Some additional public services will be needed to consolidate and expand the recent agricultural developments in the northwest region. The Bank is assisting Ethiopia in the preparation of projects for these areas.

20. Increasing the productivity of subsistence agriculture is hampered by many institutional and social problems. One of these is the complexity of the traditional tenure system, involving not only large private holdings but also church and communal ownership in some districts, and the absence of registration for most land prevents any rapid progress in land reform. The Government has prepared a set of land reform bills for submission to Parliament, which provides for cadastral surveys, registration of titles, regulation of landlord-tenant relationships and for taxation to penalize landlords for leaving land idle. These reforms will be put into effect at first in the areas where comprehensive regional development projects have been or are about to be launched. One such project has already started with Swedish financing, and another has been prepared and is currently being considered for Bank/IDA financing. Ethiopia has a large livestock population which could make a substantial contribution to national income and export earnings, provided a program of disease control and improved cattle nutrition could be successfully carried out.

21. In Ethiopia, modern education is in its infancy, and there is a great scarcity of personnel for identification, preparation, execution and management of development projects. Investment in education needs to be increased, particularly technical education and teacher training. The emphasis that is required on agriculture and education gives added importance to sound long-run fiscal policies since both these will create pressure on current expenditure. A development plan for the period 1968 to 1973 has been prepared which sets out the Government's fiscal and general policies for development in the next few years. A mission from the Bank is to visit Ethiopia later this year to assess the plan in the light of the recent economic and fiscal developments.

22. Ethiopia's total external public debt as of June 30, 1968, was US \$127 million net of undisbursed loans, and US \$234 million including undisbursed amounts. The net foreign reserves, which were equivalent to seven months' imports at the end of 1966, have since declined but were a little over five months' imports at the end of 1968. The debt service ratio has been rising slowly and had reached 10.6% in 1967. Although, therefore, Ethiopia has some margin for additional borrowing on conventional terms, the predominant role in export played by coffee makes it advisable for her to obtain as much capital as possible on concessionary terms.

Eastern Africa Department
April 21, 1969

TABLE 1: Gross Domestic Product by Sector at Constant (1965/66) Factor Costs

Sectors	Million Eth.\$					Growth Rate 1961/62-1965/66	1966/67	1967/68 ^{1/}	Growth Rate 1965/66-1967/68
	1961/62	1962/63	1963/64	1964/65	1965/66				
1. Agriculture	1833.8	1867.3	1902.7	1978.9	1992.6	2.1	2048.8	2107.6	2.8
2. Mining	5.1	5.7	6.6	10.7	12.8	25.8	13.2	13.2	1.2
3. Manufacturing	58.7	65.4	79.2	92.2	107.0	16.3	123.0	141.5	15.0
4. Handicrafts - Small scale industries	101.0	103.5	119.1	126.3	133.3	7.2	140.6	147.0	5.0
5. Building and Construction	67.4	70.1	76.6	84.5	104.4	11.5	128.5	115.2	5.0
6. Electric Power	7.3	8.5	10.4	12.6	14.0	17.7	16.2	18.9	14.2
Sub-total 2-6	239.9	253.2	291.9	326.3	371.5	11.5	421.5	435.8	8.3
7. Transport, Communication	77.4	83.3	96.7	112.2	120.4	11.6	130.0	137.7	6.9
8. Commerce, Banking	208.2	217.1	242.3	271.4	293.3	8.9	310.1	316.4	3.9
Sub-total 7-8	285.6	300.4	339.0	383.6	413.7	9.7	440.1	454.1	4.8
9. Educational Services	32.5	37.1	41.2	47.6	51.6	12.2	56.4	63.0	10.0
10. Health Services	13.7	15.9	17.6	19.4	22.3	12.9	23.2	25.0	5.9
11. Housing ownership	103.1	106.5	110.0	113.9	123.5	4.6	129.7	135.0	4.5
Sub-total 9-11	149.3	159.5	168.8	180.9	197.4	7.2	209.3	223.0	6.3
12. Public Administration and Defense	120.9	126.6	131.0	151.6	157.4	6.8	168.9	181.0	7.2
13. Domestic Services	50.1	51.0	53.2	53.6	57.2	3.8	60.3	62.9	4.9
14. Other Services	37.4	39.6	43.8	49.4	57.6	11.4	63.1	69.8	10.0
Sub-total 12-14	208.4	217.2	228.0	254.6	272.6	6.9	292.3	313.7	7.2
I. <u>Gross Domestic Product</u>	2716.5	2797.6	2930.5	3124.3	3248.0	4.6	3412.0	3534.2	4.3
II. <u>Monetary GDP</u>	1261.5	1318.7	1431.2	1594.0	1690.8	7.6	1826.7	1919.0	6.5
III. <u>Non-Monetary GDP</u>	1455.0	1478.9	1499.3	1530.3	1557.2	1.7	1585.3	1615.2	1.9
(a) Agriculture	1389.7	1412.4	1432.6	1461.4	1487.1	1.7	1513.9	1542.7	1.9
(b) Housing ownership	65.3	66.5	67.7	68.9	70.1	1.8	71.4	72.5	1.8

Source: Ministry of Planning

^{1/} Provisional

Table 2: Actual Current Budgetary Revenues

(Million Eth.\$)

	<u>1963/64</u>	<u>1964/65</u>	<u>1965/66</u>	<u>1966/67</u>	<u>1967/68</u>
<u>Direct Taxes</u>	<u>56.9</u>	<u>59.1</u>	<u>63.2</u>	<u>77.1</u>	<u>76.6</u>
Income tax	30.5	32.5	35.9	49.5	59.6
Land and cattle tax	26.4	26.6	27.3	27.6	17.0
<u>Indirect Taxes on Imports and Exports</u>	<u>133.9</u>	<u>155.0</u>	<u>169.9</u>	<u>165.8</u>	<u>166.6</u>
Motor fuel	20.3	22.6	26.5	26.1	37.1 ⁴
Import duties	61.0	68.9	81.0	77.8	71.4
Export duties	21.6	28.0	20.1	21.6	21.1
Transaction taxes on imports and exports	27.6	31.4	34.0	34.6	32.7
Excises on imported goods ^{1/}	2.3	2.8	7.2	4.7	3.3
Miscellaneous import charges	1.1	1.3	1.1	1.0	0.7
<u>Indirect Taxes on Domestic Goods</u>	<u>45.1</u>	<u>51.3</u>	<u>56.9</u>	<u>70.6</u>	<u>71.6</u>
Excise on alcohol	12.7	14.8	15.5	17.1	17.2
Tobacco (monopoly profit, regime tax and licenses)	3.6	3.7	5.0	7.2	4.9
Stamp duties	3.6	3.5	4.2	4.4	4.5
Salt tax	5.7	5.9	6.4	6.2	6.8
Excises on domestic goods	11.8	13.4	13.9	20.9	18.1
Transaction taxes on domestic goods ^{2/}	<u>7.7</u>	<u>10.0</u>	<u>11.9</u>	<u>14.8</u>	<u>20.1</u>
Total Tax Revenues	235.9	265.4	290.0	313.5	314.8
Non-Tax Revenues ^{3/}	<u>36.6</u>	<u>30.3</u>	<u>37.0</u>	<u>43.7</u>	<u>44.8</u>
Total Current Revenues ^{3/}	<u>272.5</u>	<u>295.7</u>	<u>327.0</u>	<u>357.2</u>	<u>359.6</u>

^{1/} Includes federal alcohol tax.

^{2/} Includes turnover tax and tax on construction.

^{3/} Does not include EAL reimbursements and government pension contribution.

^{4/} Includes excise on domestic petroleum product.

Source: Ministry of Finance

Table 3: Actual Budgetary Expenditures ^{1/}

(Million Eth.\$)

	<u>1963/64</u>	<u>1964/65</u>	<u>1965/66</u>	<u>1966/67</u>	<u>1967/68</u>
I. CURRENT EXPENDITURES					
<u>General Administration</u>	<u>142.0</u>	<u>160.2</u>	<u>174.3</u>	<u>183.1</u>	<u>200.4</u>
General services	11.9	12.9	13.4	14.7	15.1
National defense	57.6	67.4	74.8	73.5	86.8
Internal order and justice	51.2	58.5	63.2	69.2	69.5
Foreign relations	7.7	6.8	7.0	7.9	7.3
Finance and planning	13.6	14.6	15.9	17.8	21.7
<u>Economic Services</u>	<u>39.9</u>	<u>41.4</u>	<u>37.0</u>	<u>45.2</u>	<u>46.8</u>
Agriculture	5.4	6.6	6.6	8.4	9.1
Industry and commerce	3.9	3.8	4.1	4.6	4.7
Public works, infrastructure and communications ^{2/}	30.6	31.0	26.3	32.2	33.0
<u>Social Services</u>	<u>51.3</u>	<u>59.8</u>	<u>69.3</u>	<u>77.6</u>	<u>85.9</u>
Education	29.9	34.1	41.1	45.8	50.9
Health	15.9	17.7	18.2	18.9	19.8
Social affairs	5.5	8.0	10.0	12.9	15.2
<u>Interest on Public Debt</u> ^{3/}	<u>2.2</u>	<u>4.2</u>	<u>5.1</u>	<u>8.4</u>	<u>10.5</u>
Total Current Expenditures	<u>235.4</u>	<u>265.6</u>	<u>285.7</u>	<u>314.3</u>	<u>343.6</u>
II. CAPITAL EXPENDITURES					
<u>Economic Development</u>	<u>55.6</u>	<u>38.7</u>	<u>70.1</u>	<u>62.3</u>	<u>55.8</u>
Infrastructure and comm.	28.3	19.4	25.1	29.2	24.3
Industry, mining, commerce	16.5	6.8	25.5	15.9	15.4
Agriculture	4.3	3.1	3.9	2.9	10.6
Multi-purpose projects	3.1	4.3	4.3	2.7	3.4
Subscriptions to financial institutions	3.5	5.1	11.3	11.6	2.1
<u>Social Developments</u>	<u>2.8</u>	<u>3.0</u>	<u>3.5</u>	<u>6.0</u>	<u>11.2</u>
Education	1.8	1.7	0.8	2.2	6.1
Health	0.9	0.8	2.5	3.5	4.1
Community development	0.1	0.5	0.2	0.3	1.0
<u>Public Buildings</u>	<u>3.0</u>	<u>2.6</u>	<u>2.4</u>	<u>3.1</u>	<u>4.0</u>
Total Capital Expenditures	<u>61.4</u>	<u>44.3</u> ^{4/}	<u>76.0</u>	<u>71.4</u>	<u>71.0</u>

1/ Excluding expenditures financed as technical assistance but including those financed by foreign loans.

2/ Includes subsidy to EAL (difference between debt service by Government minus recovery from EAL).

3/ Does not include interest on EAL loans.

4/ Includes external assistance amounting to Eth.\$4.3 million.

Source: Ministry of Finance

Table 4: Financing of Budgetary Expenditures ^{1/}

	<u>1963/64</u> Actual	<u>1964/65</u> Actual	<u>1965/66</u> Actual	<u>1966/67</u> Actual	<u>1967/68</u> Actual	<u>1968/69</u> Revised Budget
Current revenues	272.5	295.7	327.0	357.2	359.6	408.6
Current expenditures ^{2/}	<u>235.3</u>	<u>266.6</u>	<u>285.7</u>	<u>315.0</u>	<u>343.6</u>	<u>360.0</u>
Public savings	37.2	29.1	41.3	42.2	16.0	48.6
Capital expenditures	<u>61.4</u>	<u>40.0</u>	<u>76.0</u>	<u>71.4</u>	<u>71.0</u>	<u>84.0</u>
Deficit	24.2	10.9	34.7	29.2	55.0	35.4
Foreign loans	26.4	10.7	38.3	27.5	26.0	42.0
Repayment of loans ^{3/}	<u>7.6</u>	<u>7.7</u>	<u>10.4</u>	<u>13.3</u>	<u>16.4</u>	<u>26.7</u>
Net foreign loans	18.8	3.0	27.9	14.2	9.6	15.3
Cash deficit	5.4	7.9	6.8	15.0	45.4	20.1
Unpaid bills	-	-	-	2.1	7.4	27.0

1/ Exclude expenditures financed through technical assistance.

2/ Includes some very minor extraordinary expenditures.

3/ Except repayment of EAL loans.

TABLE 5: Balance of Payments

(Million Eth.\$)

	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u> ^{1/}
<u>Goods and Services</u>	<u>-65.4</u>	<u>-44.9</u>	<u>-75.4</u>	<u>-111.4</u>	<u>-93.9</u>	<u>-99.2</u>
Exports f.o.b. ^{2/}	<u>223.3</u>	<u>263.1</u>	<u>291.7</u>	<u>280.7</u>	<u>257.3</u>	<u>274.9</u>
coffee	(110.9)	(158.8)	(188.3)	(156.0)	(139.2)	(152.9)
Imports c.i.f.	<u>273.6</u>	<u>307.7</u>	<u>375.7</u>	<u>404.4</u> ^{3/}	<u>357.8</u>	<u>432.4</u> ^{3/}
Trade Balance	-50.3	-44.6	-84.0	-123.7	-100.5	-157.5
Net travel & transportation	- 7.8	5.2	6.6	9.3	18.5	41.0
Investment income (net)	-13.8	-15.4	- 9.5	-12.7	-17.3	-16.9
Government n.i.e. (net)	18.3	12.3	15.4	13.2	10.0	9.6
Other services (net)	-11.8	- 2.4	- 3.9	2.5	- 4.7	24.6 ^{4/}
Net services	<u>-15.1</u>	<u>- 0.3</u>	<u>8.6</u>	<u>12.3</u>	<u>6.6</u>	<u>58.3</u>
<u>Transfer Payments</u>	<u>12.2</u>	<u>16.9</u>	<u>32.8</u>	<u>29.7</u>	<u>15.8</u>	<u>29.4</u>
Private (net)	- 5.1	- 2.5	1.5	0.3	-10.1	- 6.0
Public (net)	17.3	19.4	31.3	29.4	25.9	35.4
<u>Balance on Current Account</u>	<u>-53.2</u>	<u>-28.0</u>	<u>-42.6</u>	<u>-81.7</u>	<u>-78.1</u>	<u>-69.8</u>
<u>Capital Movement</u>						
Public long term (gross)	48.8	14.4	47.9	58.5	36.8	87.6
Repayment of public loans	13.5	13.7	20.7	21.9	26.4	26.0
Public long term (net)	<u>35.3</u>	<u>0.7</u>	<u>27.2</u>	<u>36.6</u>	<u>10.4</u>	<u>59.6</u>
Private long-term (net)	<u>32.6</u>	<u>38.5</u>	<u>40.4</u>	<u>45.1</u>	<u>30.1</u>	<u>12.1</u>
Private short-term (net)	<u>- 5.9</u>	<u>10.7</u>	<u>- 0.5</u>	<u>-10.3</u>	<u>- 4.3</u>	<u>- 2.0</u>
Monetary Movement (increase -)	<u>- 3.4</u>	<u>-26.6</u>	<u>-33.9</u>	<u>7.9</u>	<u>43.8</u>	<u>- 7.8</u>
Errors & omissions (net)	<u>- 5.4</u>	<u>4.7</u>	<u>9.1</u>	<u>2.4</u>	<u>- 1.9</u>	<u>7.9</u>

^{1/} Provisional.^{2/} Includes non-monetary gold.^{3/} 1966 figure includes Eth.\$28 million for three cargo vessels; 1968 figure includes Eth.\$40 million for civil aeroplanes.^{4/} Includes Eth.\$14 million insurance claim received for a civil aeroplane lost in that year.

Source: National Bank of Ethiopia and IMF Balance of Payments Yearbook.

Table 6: Composition of Foreign Trade

	(Million Eth.\$)							
	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u> ^{1/}
<u>Exports (f.o.b.)</u>	<u>188.6</u>	<u>199.3</u>	<u>223.4</u>	<u>262.5</u>	<u>289.5</u>	<u>277.5</u>	<u>250.0</u>	<u>266.1</u>
Coffee	93.6	107.1	110.9	155.8	188.2	156.0	139.2	152.9
Cattle hides	8.3	7.2	6.8	4.1	4.4	9.4	5.8	2.7
Goat and sheep skins	15.9	16.5	15.2	17.4	18.4	25.8	23.2	21.8
Pulses	17.8	16.3	16.6	13.6	15.4	21.2	19.7	21.3
Oilseeds	15.1	19.6	28.3	26.6	24.9	21.8	22.7	21.4
Oilseed-cakes	2.3	4.1	3.5	3.5	3.4	4.8	4.4	3.7
Chat	10.8	10.8	12.5	5.1	1.8	2.1	2.9	3.0
Fruits and vegetables	4.1	4.4	6.4	6.5	5.4	7.7	8.5	7.4
Meat canned and frozen	3.2	1.5	2.5	5.8	7.4	7.3	6.1	4.9
Others	17.5	11.8	20.7	24.1	20.2	21.4	17.5	27.0
<u>Imports (c.i.f.)</u> (by end-use)		<u>257.0</u>	<u>276.1</u>	<u>307.7</u>	<u>375.7</u>	<u>404.2</u> ^{2/}	<u>357.4</u>	<u>432.4</u> ^{3/}
Raw materials		8.4	14.1	17.1	18.2	20.3	15.8	
Intermediate goods		35.5	38.6	43.9	48.1	55.6	61.1	
Fuel		23.1	19.3	23.9	23.9	27.6	31.6	
Capital goods		95.9	104.1	119.7	163.1	172.3	143.4	
Consumer goods		90.2	96.2	98.9	118.7	123.7	103.3	
Miscellaneous		3.9	3.8	4.2	3.7	4.7	2.2	

^{1/} Provisional

^{2/} Includes Eth. 28 million for three cargo vessels

^{3/} Includes Eth. 40 million for two jet-liners

Source: National Bank of Ethiopia, Quarterly Bulletin and Imperial Ethiopian Customs Administration, Addis Ababa