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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

BRAZIL
COMPANHIA FORÇA E LUZ DO PARANA

Appraisal of the
Transmission and Distribution Project

December 1, 1966

Projects Department

CURRENCY EQUIVALENTS

US \$1 = Cr \$2, 220
Cr \$1 = 0 45 mills
Cr \$ billion = US \$450, 450

MEASURE EQUIVALENT

One mile = 1 609 kilometers

BRAZIL
APPRAISAL OF THE TRANSMISSION AND DISTRIBUTION PROJECT
COMPANHIA FORÇA E LUZ DO PARANÁ

TABLE OF CONTENTS

	<u>Page No.</u>
SUMMARY	
I. INTRODUCTION	1
II. HOLDING COMPANY ORGANIZATION	2
III. THE BORROWER	3
IV. THE POWER MARKET	4
V. THE PROJECT	5
Estimated Cost	6
VI. STATUS OF ENGINEERING AND CONSTRUCTION	8
VII. PROCUREMENT AND DISBURSEMENTS	8
VIII. FINANCIAL ASPECTS	10
Tariffs	10
Financial Position	13
Past Earnings Record	16
Proposed Financing Plan	16
Estimated Future Earnings	18
Future Financial Position	19
IX. CONCLUSIONS	20

ANNEXES

1. Centrais Elétricas Brasileiras S.A. (Eletrobras)
2. Generation and Sales of Energy
3. Estimated Cost of Project
4. Actual and Estimated Income Statements 1961-70
5. Estimated Sources and Applications of Funds Statements 1966-70
6. Actual and Estimated Balance Sheets 1961-70

MAP

This report is based on the findings of a mission in November-December 1965 to Brazil, composed of Messrs. Donald King and Ferd Rydell of the Bank.

BRAZIL

APPRAISAL OF THE TRANSMISSION AND DISTRIBUTION PROJECT

COMPANHIA FORÇA E LUZ DO PARANÁ (CFLP) ^{1/}

SUMMARY

1. Companhia Força e Luz do Paraná (CFLP) has applied to the Bank for a loan of US\$8.1 million equivalent to help finance the rehabilitation and expansion of its transmission and distribution system, excluding interest during construction. The project is estimated to cost US\$15.3 million equivalent.

ii. The project consists of the rehabilitation and expansion of the transmission and distribution system for the three-year period 1966-68. ^{2/} Rehabilitation of the present system represents about 25 percent of the total cost. The remaining costs are allocated to the construction of 125 km of 220 kv transmission lines, 37 km of 66 kv circuit, installation of 80 MVA of primary substation capacity, installation of one 16.5 MW generator in the existing Guaricana hydroelectric station, and expansion of the distribution system.

iii. CFLP is one of ten companies acquired from the American & Foreign Power Company (AMFORP) in 1964 by Centrais Elétricas Brasileiras (Eletrobras), an autonomous agency of the Brazilian Government. Eletrobras has retained the same management arrangements that were in effect under AMFORP's ownership. CFLP's operations are satisfactorily managed and it should be capable of supervising construction of the project.

iv. The proceeds of the loan would be used to finance the cost of equipment, materials and supplies procured under international competitive bidding, and the foreign currency cost of engineering services. Awards would be made after international competitive bidding with participation by qualified domestic suppliers who would be granted a 15 percent preference. Satisfactory arrangements have been made for Eletrobras to provide the balance of funds required to finance CFLP's program.

v. New federal decrees issued late in 1964 allowed for the first time the periodic revaluation of assets for tariff-making purposes. Tariffs were increased in 1965 and in June and November 1966 following the revaluation of assets. Arrangements have been made in connection with the proposed loan to ensure that satisfactory tariffs will be obtained in the future by CFLP.

vi. The project is suitable for a Bank loan of US\$8.1 million equivalent for a term of 20 years including a grace period of 5 years.

^{1/} This report is one of four essentially similar appraisal reports covering proposed Bank loans to four distribution companies in Brazil. The companies are under common ownership and as a result a considerable amount of the text is common to each report. Paragraphs and Annexes which are identical or substantially similar have been identified with an asterisk (*) throughout the four reports, which are submitted as a group.

^{2/} See Introduction, paragraphs 3 and 4 for remarks concerning phasing of program.

BRAZIL

APPRAISAL OF THE TRANSMISSION AND DISTRIBUTION PROJECT

COMPANHIA FORÇA E LUZ DO PARANA (CFLP) 1/

I. INTRODUCTION

*1. Centrais Elétricas Brasileiras S.A. (Eletrobras) an autonomous agency of the Federal Government, purchased ten electric utility companies in Brazil from the American and Foreign Power Company (AMFORP) in November 1964. The systems were then in urgent need of rehabilitation and expansion and a five-year program covering the period 1966-70 was prepared in order to supply existing and prospective demand. In response to the request of Eletrobras the Bank has agreed to consider loans aggregating the equivalent of approximately US\$60 million to assist financing of the expansion program over a period constituting three years of the five-year expansion program. In accordance with the Bank's preference to lend directly to the operating entity carrying out the project it is proposed to make separate loans to four of the largest of the companies, located in the south central region where Bank-financed power generation projects are concentrated.

2. This appraisal report covers the proposed loan of the equivalent of US\$8.1 million to one of the four companies, Cia. Força e Luz do Parana (CFLP), which operates in the State of Parana. The proposed loan would provide funds for about 53 percent of the estimated cost of US\$15.3 million equivalent of the expansion program of the company for the three-year period 1966-68 and would represent about 47 percent of the estimated cost of the five-year program. About 60 percent of the proposed loan would be expended on the distribution system and the remainder on the high voltage system. Interest during construction would not be included in the loan since the project consists predominantly of distribution facilities which would become revenue bearing shortly after installation. CFLP and the other three companies to which proposed loans would be made have not been the recipients of previous loans from the Bank.

*3. This report is based on the findings of a mission to Brazil in November-December 1965, composed of Messrs. D. King and F. Rydell of the Bank. A long delay was experienced subsequently in negotiating several issues with the Government of Brazil and the loan is only now submitted to the Executive Directors for this reason. The long interval which has

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elapsed has to some extent outdated the report, which is based on the expansion program for the three year period 1966-68. The complete re-casting of the program at this stage would result in considerable further delay in presenting the loan and to avoid this the appraisal is presented substantially as prepared on the basis of the mission's original findings. It is considered that this is justified by the circumstances.

*4. The project, as described hereafter, consists predominantly of a distribution system expansion, the implementation of which is somewhat flexible in that retardation of the program over a period can, up to a point, be compensated by a subsequent acceleration. As noted in paragraph 30 a review must be made each year of the program proposed for the next year as a condition of disbursement and proper application of the loan funds will be assured in any event. The financial statements are outdated for similar reasons but there has been no adverse change in the financial condition of CFLP and the statements are therefore considered to be a fair representation of the present and future financial position of the company.

II. HOLDING COMPANY ORGANIZATION

*5 Centrais Eletricas Brasileiras S.A. (Eletrobras), the owner of CFLP, is an autonomous agency established by the Federal Government in 1961 to carry out studies and to finance, construct and operate electric power works. It is a holding company which controls the operation of the federal utilities. It administers public funds to expand the federal power systems, assist with the expansion of other electric utilities in need of financing, and finance power facilities in under-developed areas. Eletrobras commenced operations in June 1962 and has become the most important single force in the development of the electric utility industry. Additional information concerning Eletrobras is given in Annex 1.

*6. On November 12, 1964 an agreement was concluded between Eletrobras and AMFORP whereby the Brazilian properties of the latter were acquired by Eletrobras. In summary, for US\$135 million Eletrobras purchased from AMFORP the controlling stock and the short-term notes, amounting to US\$64 million, of the ten companies, becoming the majority shareholder of each company. Payment is to be made over a period of 45 years.

*7. Prior to the acquisition of the companies by Eletrobras their operating control in Brazil had been exercised by Companhia Auxiliar de Empresas Eletricas Brasileiras (CAEEB), a management company established in 1957 by AMFORP. Eletrobras, which acquired control of CAEEB when it purchased the companies, has retained this arrangement. CAEEB maintains its headquarters in Rio de Janeiro where it employs a staff of 250. The administration department supervises the operations of the associated companies, provides procurement services for foreign purchases and sets labor and wage policy. The engineering department supervises planning and the capital budgets of the companies, prepares specifications, sets technical standards and orients other phases of the operations from a

technical standpoint. The finance department supervises the accounting activities of the companies, negotiates loans, makes rate studies and prepares rate applications and supervises the operating budgets.

*8. The organizational structure of CAEEB, instituted by AMFORP, has remained intact. However, it is understaffed as a result of the conditions described in paragraph 13. With the planned increase in staff to meet normal requirements, the organization should be fully competent to provide effective management supervision of the companies. It would find it difficult, however, to coordinate and direct the proposed expansion program in addition to supervising the operation of the companies, and it therefore plans to make extensive use of the services of consultants in this connection, as noted in paragraph 32.

III. THE BORROWER

9. CFLP supplies the city of Curitiba and environs, with a population of 400,000, in the State of Parana. In 1965 the demand was 60,000 kw and energy sales were 245 million kwh. The company owns generating stations with an aggregate capacity of 50 MW, of which 10 MW is thermal. It will be necessary for it to purchase power to supply the bulk of the growth in the future (paragraph 21). The company has a 66 kv transmission system linking Curitiba with the generating stations, 50 km distant.

10. At present CFLP has approximately 480 km of primary distribution circuit, 1,000 km of secondary distribution circuit and 55 MVA of distribution transformer capacity. Power is stepped down to the primary distribution voltage of 13.8 kv at a number of substations and then distributed over a 127/220 volt secondary network. In the center of the city, where there are a number of large buildings, the distribution system is underground.

11. CFLP was established in 1928. Approximately 90 percent of the common stock is owned by Eletrobras, with the remaining 10 percent held by the public. It is administered by a five-man Board of Directors elected for a term of three years. The present Board took office in March 1965 and all of the members have had long service with the company or CAEEB. The President of CAEEB serves as President of CFLP, the operating company, which is managed by an Executive Director, who is a member of the Board. Major policies are set by CAEEB but the management of the company is responsible for the day-to-day administration.

12. CFLP employs a total staff of 350 including 200 in the operating division, 80 in the accounting division, 14 in the engineering division and 7 in the purchasing division. The CFLP organizational structure, instituted by AMFORP, is satisfactory.

*13. Prior to their acquisition by Eletrobras, the AMFORP companies were in difficult financial straits due to the Government policy toward investor-owned utilities. This resulted in the companies' inability to obtain rate increases during the recent period of rapid inflation. The maintenance and expansion programs of the companies were severely limited by the shortage of funds. In addition, a considerable number of the staff left their employ and there is now a shortage, particularly engineering and supervisory, in the companies. During the next two years CFLP plans to increase its staff by about a total of 100, including engineers and technicians. In view of the scale of utility expansion in Brazil, however, some difficulty may be experienced in obtaining a sufficient number of engineers.

*14. In the past, major substation and transmission engineering was carried out by CAEEB. Distribution planning was carried out by the CFLP engineering staff according to standards established by CAEEB. These arrangements will continue although due to staff shortages it will be necessary to employ consulting engineers to assist with much of the design work during the expansion program (paragraph 32). The policy of the company is to employ contractors for construction work.

*15. Due to lack of funds, expansion of the power system facilities necessary to satisfactorily supply the increasing load has not been possible in recent years and the reserve capacity which normally would be maintained in accordance with sound utility practice has been utilized to meet the increasing load. When the reserve capacity was fully employed, equipment was then overloaded in order to meet further growth. This has resulted in unsatisfactory operating conditions including low voltage and service interruptions.

*16. The shortage of funds also forced the company to limit maintenance. As the result of this and the abnormal operating conditions the useful life of some distribution equipment, particularly transformers, may have been shortened. Replacement of a considerable number of transformers which have become overloaded or obsolete would be necessary as part of the expansion program.

IV. THE POWER MARKET

17. Adequate records have been kept by CFLP concerning power sales which in 1965 amounted to 245 million kwh, with a peak demand of 59 MW. Residential service accounted for 38 percent, commercial 23 percent, industrial 21 percent, and miscellaneous 18 percent of total sales. The rate of growth has been about 8 percent annually during the past ten years.

18. The city of Curitiba is the commercial, marketing and industrial center of the State of Parana, one of the richer states in the country and an important area of coffee and other agricultural production. At the end of 1964 CFLP had about 98,000 customers with an average annual consumption of 2,700 kwh per customer.

19. The power market has been studied by the company's consultants, Cia. Internacional de Engenharia e Construcoes (CIECO), a Brazilian affiliate of the International Engineering Company of San Francisco. It is estimated that by 1970 the number of customers would increase to 130,000 with an average annual consumption per customer of about 3,000 kwh, and total annual sales of 380 million kwh, representing an average annual growth of nearly 9 percent. The forecast of demand appears reasonable.

20. Until 1962 the company's entire sales of electricity had been supplied from its own generating capacity. Beginning in 1963 it was necessary for the company to purchase power and in 1964 purchases amounted to about 7 percent of total requirements. Future load growth would be supplied by additional purchases which by 1970 should approach 50 percent of total requirements.

21. The company purchases power at present from Companhia Paranaense de Energia Eletrica (COPEL), the state utility in Parana. In 1965/66 this is being supplemented by purchases from UTELEFA, a small joint federal-private generating company in the State. In 1967 the CFLP system is to be connected by a transmission line with the thermal plant of the Sociedade Termoeletrica de Capivari (SOTELCA), a joint federal-state company in the State of Santa Catarina, from which it would obtain the entire requirements for purchased power in 1968-69. These arrangements are the subject of an agreement of July 20, 1965, between Eletrobras, CFLP, COPEL and SOTELCA. In 1970 the hydroelectric plant of Eletrica Capivari-Cachoeira S.A., owned jointly by COPEL and Eletrobras, should be completed at which time CFLP would, subject to arrangements to be made, obtain from it most of the requirements for purchased power. Annex 2 tabulates the past record and forecast of generation, purchases and sales for the periods 1961-65 and 1966-70 respectively.

22. Power system losses, expressed as a percentage of total generation plus purchased power, have increased for several years reflecting overloading of distribution facilities. The estimate of future losses (Annex 2) forecasts them at somewhat higher levels in anticipation of the additional transmission losses which would result from the purchase of power from the distant thermal and hydroelectric stations (paragraph 21), notwithstanding the gradual reduction in distribution losses which would be achieved as the result of the distribution expansion program. For the purpose of estimating expenses on a conservative basis, it has been assumed that losses would still approximate 19 percent by 1970. However, as set forth in the consultants' report, it is expected that substantially lower losses would be achieved by that time if the expansion program is carried out as planned.

V. THE PROJECT

23. The project comprises the rehabilitation and expansion of the transmission and distribution system and the installation of an additional generator in an existing plant, during the three-year period 1966-68.

About 25 percent of the expenditure will be required to rehabilitate the existing system and increase its capacity to satisfactorily supply the present load. The remainder would provide for expansion of the system commensurate with the increase in load anticipated for the three-year period. The high voltage portion would involve the construction of 125 km of 220 kv transmission line, to link Curitiba with SOTELCA (paragraph 21), 37 km of 66 kv circuit, and the installation of 80 MVA of primary substation capacity. The addition to the generating plant would comprise the installation of a single 16.5 MW generator in the Guaricana hydro-electric station to complete the plant, which was commissioned in 1958 and has a present capacity of 22.5 MW, together with the associated transformer, switchgear and controls.

24. At the primary distribution level of 13 8 kv the work would comprise the installation of additional primary feeders and the rebuilding of some of the existing feeders. For the secondary network operating at 127/220 volts the program would provide for the connection and supply of approximately 13,000 new customers, the installation of additional distribution transformer capacity, and the reinforcement of secondary network feeders to relieve overload on existing facilities. The program would include the installation of about 30,000 kva of distribution transformers, associated switchgear and ancillary equipment, including the installation of about 23,000 meters. A substantial amount of the expenditure would be allocated to improvement and expansion of the underground system (paragraph 10).

Estimated Cost

25. The estimated cost of the project is given below. A more detailed estimate is given in Annex 3.

	Bank Financing	Local Financing	Total
	(Thousands US\$ Equiv.)		
Transmission	2,000	1,260	3,260
High-voltage Substations	900	160	1,060
Distribution	2,780	3,700	6,480
General Equipment, including additional Generator and Metering	1,520	780	2,300
Engineering Services	120	430	550
Contingencies	780	870	1,650
TOTAL	8,100	7,200	15,300
	53%	47%	

*26. The proposed loan amount would be used to finance equipment, materials and supplies procured under international competitive bidding, including domestic suppliers, and the foreign currency cost of engineering services. It would not be used to finance the cost of labor, of wood and concrete supports, of a large amount of hardware and of such materials as cement, which would not reasonably be obtained outside Brazil, and which, therefore, would not be procured under international bidding

*27. Brazil produces most of the items of equipment and materials to be financed by the proposed loan. It is difficult to assess the competitive position of Brazilian industry and to estimate the proportion of the Bank financed goods which might be purchased in Brazil. However, from the information which is available 50 percent of the loan might be used for local purchases.

*28. The cost estimates were prepared by CIECO and CFLP assisted by an experienced Brazilian engineering firm. CIECO, with the assistance of the International Engineering Company assigned prices on the basis of information available concerning international pricing of the equipment and materials. These same prices were used in computing the cost of the programs of the other three companies to which it is proposed to make loans, thus assuring uniformity. A contingency allowance of approximately 11 percent has been included for the Bank financed component of the project. This is to provide for some increase in the cost of equipment and materials which would be subject to increase as the result of changes, particularly copper. In addition, it is intended to make allowance for increases in costs which in some cases may result to the borrower from the purchase of Brazilian goods under the 15 percent preference formula described in paragraph 33.

*29. The local currency cost estimate was prepared in US\$ equivalent, as is customary in Brazil, where the rate of inflation has been high, to provide a reasonably firm basis for comparison with actual costs as they are incurred. Increased local costs due to inflation are expected to be offset by periodic tariff adjustments permitted by law.

*30. The total estimated cost was prepared by extending to all the areas covered by this program the detailed cost estimates made for typical installations and areas. In view of the method it would be necessary for the company to make detailed studies of the system expansion and prepare detailed cost estimates each year as the program progresses. It has been agreed that these studies and estimates in respect of the program for a particular year would be submitted in a form satisfactory to the Bank as a condition of further disbursement in respect to goods purchased during that year.

*31. The expansion of the distribution system would be continued after 1968. Provision has been made in the Estimated Source and Application of Funds, 1966-70 (Annex 5), for this and for other capital improvements, including buildings and transportation equipment.

VI. STATUS OF ENGINEERING AND CONSTRUCTION

*32. As noted in paragraph 28, CIECO supervised the preparation of the cost estimates and would generally supervise and coordinate the project. Detailed planning, and design of the transmission and large substation work would be undertaken by CIECO and CAEEB. Distribution planning and design would be undertaken by CFLP and by a local experienced Brazilian engineering firm. Supervision of construction would be provided by CFLP. Virtually all construction, both transmission and distribution, will be carried out by experienced Brazilian construction firms. Assurances have been received that CAEEB and CFLP would continue to employ consulting engineering firms satisfactory to the Bank.

VII. PROCUREMENT AND DISBURSEMENTS

*33. As noted previously, the equipment and materials which would be financed by the proposed Bank loan (paragraph 26) would be purchased under international competitive bidding, including Brazilian suppliers. The method of comparing foreign and domestic bids, which follows that agreed between the Government and Bank in connection with previous power loans, is quoted in part as follows:

"The Borrower intends to invite firms producing goods in Brazil to participate in the international competitive bidding. In the case of goods produced in Brazil the Borrower may award the order to the lowest Brazilian bidder offering satisfactory terms and conditions, provided that his offered price does not exceed the offered price of the lowest acceptable foreign bidder by more than 15 percent. Comparison of bids will be made without taking into account customs or other similar duties. For firms in Brazil, the delivery price will comprise the F.O.B. plant cost plus freight, insurance and other delivery costs to Curitiba. For non-Brazilian firms, the delivery price will be based on the C.I.F. landed cost, port of entry, before customs duties, plus inland freight, insurance and other delivery costs to Curitiba. For reasons of economy, orders may be placed jointly on behalf of the Borrower and any of the other three companies which are the recipient of Bank loans. In such cases comparison of bids will take into account the fact that part of the order will be delivered at Curitiba and the other part or parts at the delivery place provided for each of the other companies. As the 15 percent preference allowed firms in Brazil is in lieu of customs duties, the 15 percent will be added to the C.I.F. landed cost (excluding customs duties) of the non-Brazilian goods, before inland freight, insurance and other costs. In the case of bids composed of both cruzeiros and foreign currency the cruzeiro portion thereof will be dealt with as a Brazilian bid and the foreign exchange portion as a non-Brazilian bid.

"For comparison purposes all bids after evaluation will be converted into curzeiros at the Bid Comparison Rate of Exchange. The Bid Comparison Rate of Exchange is understood to be the dollar selling rate of the Banco Central da Republica do Brasil plus the exchange surtax (but not to exceed 30 percent), if any, prevailing at the date on which bids are closed. It is further understood that the Bank will, on its own initiative, or at the request of the Borrower or Guarantor, reconsider and, if necessary, revise the Bid Comparison Rate of Exchange, whenever there should be a substantial change in the Brazilian exchange system which would, in the judgment of the Bank, render such rate unsuitable for bid comparison purposes.

"The Guarantor will take all such measures as shall be necessary in order to facilitate the importation, free from all legal and administrative limitations or restrictions, of goods purchased outside Brazil in accordance with the provisions hereof and of the Loan Agreement."

In the latter part of 1965 the Government eliminated the exchange surtax and established a new Banco Central buying rate of CR\$2220 = US\$1. At the present time, therefore, local and foreign bids would be compared as described in detail above using a bid comparison rate of exchange of approximately CR\$2220 = US\$1 and allowing a 15 percent preference for local bidders.

*34. CIECO would prepare specifications and evaluate bids and would provide overall coordination of procurement services for both foreign and locally purchased goods to assure that the timing and quantities of goods purchased would be in accordance with construction progress. CAELB would provide purchasing services for the procurement of goods obtained with Bank funds. CFLP would be responsible for procurement of local goods.

*35. Under this arrangement CFLP's Bank financed goods would be grouped with those of the other three companies which are the recipients of proposed Bank loans, so that in most instances a single order would be placed to obtain the price advantage of larger orders. However, invoicing and delivery would be made directly to the respective companies in accordance with the allotments specified.

VIII FINANCIAL ASPECTS

Tariffs

- * 36 The regulations governing power operations and tariffs are contained in the Water Code of 1934 and subsequent amendments and decrees, including in particular a decree dated February 26, 1957, and three decrees dated November 4, 1964. Prior to 1964, tariffs were based on the use of historic values of investment and became increasingly unrealistic as inflation developed, causing many utilities to incur operating losses for several consecutive years. The 1964 decrees reflected a major change in Government policies by allowing utilities to revalue their investment, and thus making it possible for utilities to apply for tariffs which would yield adequate returns.
- * 37 Under the existing regulations, tariffs are reviewed and approved by the Waters Division every three years or at shorter intervals, at the initiative of the Waters Division or the utility. Utilities are permitted to apply for tariffs which would yield revenues covering (a) operating costs, (b) straight-line depreciation of gross fixed assets in operation, excluding land and land rights, at annual rates of up to 8 percent for thermal plants and up to 5 percent for all other facilities including hydro plants, but with no minimum in either case, (c) a reversion provision of up to 3 percent, or an amortization provision of up to 5 percent, on the total gross fixed assets in operation, also without minima, and (d) a return of 10 percent on the remunerable investment. Remunerable investment is defined as gross plant in service (excluding assets acquired through contributions in aid of construction) less depreciation and reversion or amortization reserves, plus reversion or amortization funds and an allowance for working capital consisting of operating inventories, the equivalent of two months billing, and cash (up to the value of the reserve for depreciation balance) excluding cash representing contributions in aid of construction. Shortfalls in achieving the return of 10 percent in the three-year tariff period may be recovered, in principle, in the subsequent three-year period. Another provision in the regulations, however, permits tariff adjustments for recovering shortfalls to be made at more frequent intervals.
- * 38 Between tariff revisions, the following surcharges may be added by the utilities on their current tariffs without permission of the Waters Division: (a) monthly, for compulsory increases in wages, social benefits, cost of fuel and purchased power, and (b) semi-annually, for increases in foreign debt service due to changes in the foreign exchange rate.
- * 39 Tariff adjustments for the revaluation of the balance sheets accounts can be made as often as economic correction factors (coefficients), showing the variations in the purchasing power of the currency, are published by the National Economic Council. The coefficients are issued annually about two months after the end of each year for the use of industry in general. They are applied by utilities to up-date the values of plant in service, depreciation and amortization or reversion reserves, and certain

local currency loans from the National Development Bank and/or Eletrobras Foreign currency components of the book value of fixed assets are converted into local currency at the rate of exchange in effect at the time the assets are acquired Foreign debts are revalued on the basis of the current rate of exchange The amount by which the revaluation of fixed assets exceeds the revaluation of reserves and loans is set aside as a revaluation reserve which is subject to a 5 percent tax

- * 40 In addition to the tariffs, two surcharges are being levied on the consumer's electric bill by the Federal Government to help finance power expansion in the country In the case of the distribution companies reviewed in connection with appraisals for Bank loans, the combination of these surcharges have amounted to between 40 percent and 50 percent of the average tariff in 1965 The proceeds of one of these surcharges, the "sole" tax which was created in 1954, are allocated among the Federal, State and Municipal authorities This tax, the rate of which varies according to classes of consumers, is presently based on an average price per kwh computed periodically by the National Council of Water and Electric Energy Another surcharge, similarly computed and assessed, is the "compulsory loan", introduced in November 1962 and which is to terminate in 1968 The proceeds go to Eletrobras which in turn invests such funds in various power projects in the form of loans or share capital Eletrobras issues to the consumers, for the amount of the "compulsory loans" paid, debt certificates carrying an interest rate of 12 percent and redeemable in 10 years A third surcharge, which is a social security tax, is 8 percent of the tariff
- * 41 The implementation of the revaluation provision was not entirely satisfactory during the initial year, 1965, due not only to the understandable complexities involved with the transition, but also to the permissive character of several important provisions of the new regulations Revaluation was not then compulsory, the legislation provided for maximum rates of depreciation and amortization but no minimum rates were prescribed and recovery of shortfalls in earnings at intervals and for periods shorter than three years was only optional In addition, there was uncertainty among utilities in regard to interpretation of certain provisions of the regulations and long delays were experienced in a number of instances before tariffs were actually adjusted to reflect revaluation of assets
- * 42 The Bank was particularly concerned with two possible consequences of the permissive character of the regulations Different tariff policies could be followed which in the case of interconnected utilities, might well lead to conflicting principles being used in calculating the apparent cost of important blocks of power and could result in important economic decisions being based on erroneous assumptions While efforts were being made by Government to implement sound and, in certain instances, relatively high tariffs, there existed the possibility that, in compliance with the same regulations, utilities might be allowed to revert in the future to inadequate tariff levels
- * 43 These questions were brought to the attention of the Government early in 1966 It was suggested that regulations should be tightened to ensure that a minimum and uniform level of tariff performance be required

from all utilities in the future. The Government indicated that it was aware of this problem and was planning to continue improving the implementation of the regulations. It was not prepared at the time to propose correcting legislation to Congress. Pending such legislation, however, it was suggested that the Bank should define in a more detailed and specific rate covenant than those in the agreements for earlier power loans, the minimum level of financial performance it expected utilities to achieve, and that the Government would support extension of this type of rate covenant to as many other utilities as possible, through Eletrobras.

* 44. During the negotiations for the four Distribution Loans, however, the representatives of the Brazilian Government objected that the detailed covenants proposed might conflict with Brazilian law. Pending clarification of this point, negotiations were suspended. Conversations continued and the Government informed the Bank recently that legislation had been enacted by Congress which will (1) make the revaluation of utilities' assets compulsory, a measure which alleviates much of the Bank's concern, (2) reduce by one half the level of electrification taxes and (3) extend the surcharge on compulsory loans to 1973, provide for their annual revaluation, interest at 6 percent and a 20 year term.

* 45. Negotiations between the Government and the Bank over the question of tariffs finally resulted in the following

- (1) The Government, CFLP and the other Distribution Companies agreed to a covenant under which (a) as provided by the Brazilian legislation, tariffs will be set so as to produce revenues at a level consistent with sound financial and public utility practices, using straight-line depreciation which shall be not less than that based on the useful lives of depreciable assets in operation, and (b) as permitted by the Brazilian legislation, assets will be revalued and tariffs will be correspondingly adjusted at least once every calendar year.
- (2) A change in legislation which shall adversely affect the setting of tariffs at the level stated above, shall be an event of default.
- (3) In a letter to CFLP and the other Distribution Companies the Bank will define the standard which it would use to analyse a change in legislation for the purpose of (2) above. This standard shall be whether revenues from the sale of electricity are sufficient to (a) cover all of the Borrower's operating expenses, including straight-line depreciation of gross revalued fixed assets in operation, at rates based on the useful lives of assets and (b) produce a reasonable annual rate of return on the revalued average net fixed assets in operation (which under presently foreseeable conditions would be of the order of 10%).

* 46. In the course of 1966, the assets of CFLP have been revalued twice, to reflect the official cost indices at December 31, 1964 and 1965. Corresponding tariff adjustments were made in June and November. The tariffs

introduced in June were calculated to provide inter alia for depreciation charges at 5 percent, reversion charges at 3 percent and a 10 percent return on the remunerable investment. Details of the November adjustment are not yet available.

Financial Position

- * 47 CFLP's financial statements for 1965 were audited by Boucinhas & Compos, Certified Public Accountants. The accounting methods followed and the auditing arrangements are satisfactory. In connection with the proposed loan, CFLP should agree to continue to employ auditors satisfactory to the Bank and to submit certified annual financial statements with the auditor's report.
- * 48 The estimated financial position of CFLP as of December 31, 1965 is presented in the following statement and in Annex 6. Two balance sheets have been shown in the following statement to indicate the effect of the revaluation which will be recorded in 1966. The first balance sheet reflects the value of the assets, capital and liabilities based on the revaluation made in April 1965, which applied the 1964 coefficient. The second balance sheet shows the result of revaluation based on the 1965 coefficient of 1.27.

COMPANHIA FORÇA E LUZ DO PARANÁ

BALANCE SHEET
DECEMBER 31, 1965

(in millions of Cruzeiros)

<u>ASSETS</u>	<u>ACTUAL</u> Based on 1964 Coefficient and Foreign Exchange Rate of <u>Cr\$1850 to US\$1</u>	<u>ESTIMATE</u> Revalued Based on 1965 Coefficient and Foreign Ex- change Rate of <u>Cr\$2220 to US\$1</u>	<u>Increase</u>
<u>Fixed Assets</u>			
Gross plant in service	32,265	40,709	8,444
Less depreciation reserve	<u>4,548</u>	<u>5,620</u>	<u>1,072</u>
Net plant in service	27,717	35,089	7,372
Work in progress	<u>222</u>	<u>222</u>	<u>-</u>
Total Fixed Assets	<u>27,939</u>	<u>35,311</u>	<u>7,372</u>
<u>Investments</u>	95	95	-
<u>Net Deferred Charges</u>	324	324	-
<u>Current Assets</u>	<u>2,941</u>	<u>2,941</u>	<u>-</u>
Total Assets	<u>31,299</u>	<u>38,671</u>	<u>7,372</u>
<u>CAPITAL AND LIABILITIES</u>			
<u>Capital</u>			
Share capital	10,850	10,850	-
Surplus	587	587	-
Reserves			
Reversion reserve	322	322	-
Legal reserve	83	83	-
Contingencies and miscellaneous reserves	<u>44</u>	<u>44</u>	<u>-</u>
Revaluation reserve	<u>2,342</u>	<u>6,848</u>	<u>4,506</u>
Total Capital	<u>14,228</u>	<u>18,734</u>	<u>4,506</u>
<u>Contributions in Aid of Construction</u>	361	361	-
<u>Long-Term Debt</u>			
Export/Import Bank loan 4-1/2% - 1953-77	4,026	4,831	805
Eletrobras loan (former AMFORP debts)	9,902	11,882	1,980
Eletrobras - other loans	<u>445</u>	<u>445</u>	<u>-</u>
Total Long-Term Debt	<u>14,373</u>	<u>17,158</u>	<u>2,785</u>
<u>Current Liabilities</u>			
Current creditors and accruals	1,392	1,392	-
Cash dividends payable	542	542	-
Long-term debt due within one year	<u>403</u>	<u>484</u>	<u>81</u>
Total Current liabilities	<u>2,337</u>	<u>2,418</u>	<u>81</u>
Total Capital and Liabilities	<u>31,299</u>	<u>38,671</u>	<u>7,372</u>
Debt/Equity Ratio	51/49	48/52	

49 CFLP's revaluation of April 1965, increased net plant in service by about Cr\$11,700 million. The estimated revaluation that will be recorded in 1966, based on the 1965 coefficient, will increase the net plant in operation by about Cr\$7,400 million to a total value of Cr\$35,089 million at December 31, 1965.

50 Estimated share capital outstanding at December 31, 1965 is Cr\$10,850 million. After CFLP revalues its accounts based on the 1965 coefficient, the revaluation reserve will be increased to Cr\$6,848 million. In accordance with current regulations this reserve must be disposed of by an equivalent stock distribution. Thus in 1966 the share capital will be increased from Cr\$10,850 million to about Cr\$17,700 million without taking into account new equity investments.

51 An Export/Import Bank loan amounting to US\$4.3 million was made in 1953 to finance a 4 MW turbo-generator in the existing Chamine Hydroelectric Plant, tainter gates at the Vossoroça Dam, six 1 MW diesels for the Capanema Station, two 5 MW hydro units for the Guaricana Station and expansion of the transmission and distribution systems. CFLP revalued this loan in accordance with the rates of exchange prevailing in 1963 and 1964. In April 1965, it was again revalued based on the rate of exchange of Cr\$1,850 to US\$1 and this value is reflected in the first balance sheet above. In November 1965, the rate of exchange was increased to Cr\$2,220 to US\$1 at which rate the value of the Export/Import Bank loan outstanding at December 31, 1965 is shown in the second statement above. The Export/Import Bank loan was originally made to CFLP and the guarantor was the Brazilian Electric Power Company (BEPCO), a wholly owned subsidiary of AMFORP. On March 18, 1965, an agreement was executed between the Export/Import Bank and the Brazilian Government, whereby new notes were exchanged for the notes issued under the original loan agreement and the guarantor was changed from BEPCO to the Brazilian Government.

* 52 At the time of the sale of the AMFORP companies to the Brazilian Government, Eletrobras not only acquired the capital stock of the companies but also about US\$64 million in debts owed by the companies to AMFORP. These debts were represented by 8 percent demand notes but the companies always considered such notes as long-term indebtedness. The purchase and sale agreement specified that service on these notes would be paid to Eletrobras, which in turn would use the proceeds for payments on the purchase price to AMFORP. The companies therefore will revalue these notes periodically in accordance with the prevailing foreign exchange rate. At the time of the Bank's appraisal mission in November 1965, no definite arrangements had been made for the operating companies to repay these notes to Eletrobras. Fixed terms have now been established for these notes as follows: (1) interest rate 13 percent, (2) amortization payments to commence in 1968 (Eletrobras' amortization payments to AMFORP also commence in 1968), and (3) amortization period of 25 years. These terms were used in connection with the financial projections in this report.

53 The other loans from Eletrobras, amounting to Cr\$445 million, represent funds advanced to cover capital expenditures and working capital requirements since the date of acquisition of CFLP by Eletrobras. For

purposes of this report it has been assumed that these funds will carry the same terms as those mentioned in the preceding paragraph except that amortization payments will start in 1970

Past Earnings Record

54 Income Statements for the years 1961 through 1964 are shown in Annex 4. Until early in 1965 CFLP's tariffs were based on historic costs of its remunerable investment. Although tariff increases were made in the past, increasing the average revenue per kwh from Cr\$1 50 in 1961 to Cr\$13 55 in 1964, they did not keep pace with the rapid inflation. During the period from 1961 through 1964 operating results were exceptionally poor, with operating losses occurring in three of the four years, culminating with an operating loss of Cr\$554 million in 1964.

55 Operations were substantially improved in 1965. Increased tariffs based on the revaluation applying the 1963 coefficient increased the average revenue per kwh from Cr\$13 55 in 1964 to Cr\$31 95 in 1965. Operating income is estimated at about Cr\$2 8 billion after deducting charges for depreciation, reversion and exchange losses. Excluding income and revaluation taxes this would represent an 11 6 percent rate of return on the net fixed assets in operation at the end of the year, assuming the assets were valued on the basis of the 1964 coefficient. However, if the assets had been valued in accordance with the 1965 coefficient, if depreciation had been recorded at 4 percent and if no charges had been made for reversion and exchange losses, the rate of return would have been only 7 9 percent. This rate of return reflects the facts that tariffs were computed on 1963 values and that they had not become effective until about mid-1965.

Proposed Financing Plan

56 A forecast of sources and applications of funds for the period 1966-1970 is shown in Annex 5 and summarized in the table below. During the first three years of this period, CFLP would carry out the IBRD transmission and distribution project as described in paragraphs 23 and 24, which is estimated to cost Cr\$33,970 million excluding interest during construction. After the completion of the Bank's project CFLP intends to carry out a continuous expansion program to meet the estimated annual increase in demand for power. The forecast for this program for 1969 and 1970 indicates a cost of Cr\$4,400 million for the two-year period. Capital expenditures in addition to the programs described above and totalling about Cr\$5,900 million, are expected to be incurred throughout the 1966-1970 period (see paragraph 31).

57. CFLP's fund requirements for the five-year period are expected to total Cr\$47,650 million. Capital expenditure requirements would total about Cr\$45,000 million, including Cr\$745 million for interest during construction. About Cr\$2,600 million would be required for additional working capital based on the assumption that CFLP would maintain a current ratio of at least 1 to 1 through 1970.

58 Comments on the sources of funds follow the summary table shown on the next page.

COMPANHIA FORÇA E LUZ DO PARANÁ
SUMMARY OF SOURCES AND APPLICATIONS OF FUNDS
FOR THE PERIOD 1966 THROUGH 1970

<u>Applications of Funds</u>	<u>Amount</u> <u>(Millions of Cruzeiros)</u>	<u>Percent</u>
Construction Expenditures		
IBRD Distribution Program	33,970	71.3
Subsequent Normal Expansion	4,400	9.2
Other Capital Expenditures	<u>5,900</u>	<u>12.4</u>
	44,270	92.9
Interest Charged to Construction	<u>745</u>	<u>1.6</u>
Total Construction Costs	45,015	94.5
Net Additions to Working Capital	<u>2,635</u>	<u>5.5</u>
Total Requirements	<u>47,650</u>	<u>100.0</u>
 <u>Sources of Funds</u>		
Internal Cash Generation	34,957	
Less		
Amortization of Debt	3,857	
Interest Charged to Operations	11,283	
Cash Dividends	<u>8,925</u>	
Total Deductions	<u>24,065</u>	
Net Internal Cash Generation	10,892	22.9
Additional Share Capital	17,980	37.7
Proposed IBRD loan	17,980	37.7
Other Resources	<u>1,098</u>	<u>2.3</u>
Total Available Funds	47,950	100.6
Surplus Cash	<u>300</u>	<u>0.6</u>
Available Funds to Meet Requirements	<u>47,650</u>	<u>100.0</u>

59 During this period the estimated net internal cash generation would total Cr\$10,892 million after payment of debt service and dividends, or about 23 percent of the fund requirements

60 Under the present financial plan, share capital will be issued during the period 1966 through 1970 for a total amount equal to that of the proposed Bank loan of Cr\$17,980 million (US\$8 1 million), or about 38 percent of the fund requirements. The Cruzeiro amount of the share capital contributions would be increased to match any increase in the Cruzeiro amount of the Bank loan due to devaluation of the currency. During negotiations Eletrobras agreed that it will subscribe to the new shares in relation to its holdings (at present 89 percent), and will also purchase all new shares not taken up by the minority shareholders.

61 The proposed Bank loan of US\$8 1 million is assumed to have a term of 20 years, including a 5 year grace period with an interest rate of 6 percent. Interest during construction has not been included in the loan.

62 Other resources amounting to Cr\$1,100 million, consisting primarily of contributions in aid of construction, represents 2 percent of the total requirements.

63 Under the proposed financial plan, it is estimated that by the end of 1970, the total available funds would exceed fund requirements by about Cr\$300 million or less than 1 percent. During negotiations it was agreed that in the event of a shortage of funds cash dividends would not be paid, and furthermore, that Eletrobras would contribute all additional funds necessary for completing the 1966-1970 expansion program.

Estimated Future Earnings

64 The financial forecast for the five-year period, 1966 through 1970, is based on the assumption that the Borrower achieves the required earnings as specified in the tariff covenant included in the proposed Loan and Guarantee Agreements, i.e., a 10 percent return on the revalued average net fixed assets in operation (see paragraph 44). Foreign exchange expenditures and sources of funds have been cast in terms of the official exchange rate as of December 31, 1965, of Cr\$2,220 to US\$1. As far as local currency is concerned, normal increases in operating costs due to expanded operations have been considered but no provision has been made for the loss of value of the Cruzeiro after 1965 as most of the effects will have been provided for under the tariff arrangements and adjustments for inflation mentioned in paragraph 38. Depreciation has been computed at a 4 percent rate and no charges have been shown for reversion. Kwh sales have been projected in accordance with the load forecast as shown in paragraph 19 and Annex 2.

65 The projections show that operating revenues would increase from Cr\$7,828 million in 1965 to Cr\$19,695 million in 1970 or an increase of about 152 percent. Operating income is expected to increase from about Cr\$2,800 million in 1965 to about Cr\$6,000 million in 1970. Because of revaluations based on the 1964 and 1965 coefficients it is expected that the average price per kwh would increase from Cr\$31 95 in 1965 to Cr\$45 41 in

1966 The average price per kwh should increase during the next two years reaching a maximum of Cr\$55 07 in 1968 and then decrease in the following two years to Cr\$51 83 in 1970 The increase in average price per kwh in 1967 and 1968 is attributed to the fact that during these years increases in plant facilities will be proportionately much greater than the steady annual increase in demand for power As the expansion program subsequently tapers off and as the sales continue to increase, the average price per kwh will decline with operating revenues still producing a 10 percent return on the average net fixed assets

66 Operating income would cover interest charges, including capitalized interest, 1 5 times in 1966, and this coverage would increase annually reaching 2 2 times in 1970 Annual debt service would be covered by internal cash generation 1 9 times in 1966 and increase to 2 5 times in 1970 as shown in the Source and Application of Funds Statements, Annex 5 These ample coverages reflect the large proportion of equity funds in the proposed financing plan Since the proposed Bank loan has a five-year grace period, the first semi-annual amortization payment is not due until August 1971, and the first full year's debt service will not occur until 1972 It is estimated, however, that interest coverage would be 2 5 times and 2 8 times in 1971 and 1972 respectively Debt service coverage is expected to be 2 7 times and 2 6 times in 1971 and 1972 respectively

67 On the basis of the proposed tariff increases and estimated load growth, all the former AMFORP companies expect to realize substantial operating profits and should be in a position to resume payment of dividends Eletrobras and CAEEB have therefore proposed a schedule of dividend payments for the future The proposal includes dividend payments starting in 1966 in accordance with the following schedule

Proposed Schedule of Dividends

<u>Year</u>	<u>Dividend Rate</u>
1966	3%
1967	6%
1968	8%
1969	10%
1970	10%

68 CFLP declared a 5 percent dividend in 1965 and it has therefore been assumed that a 5 percent dividend would be declared in 1966 Based on the forecast of operating results as shown in Annex 4, and the availability of funds as shown in Annex 5, it is expected that CFLP will produce sufficient operating income to declare annual cash dividends corresponding to the rates proposed in the above schedule for the three year period 1967-1969 The forecast shows, however, that because of the available earned surplus balance, dividends must be limited to 8 percent in 1970

Future Financial Position

69 Annex 6 shows forecast balance sheets as of December 31, 1965 through 1970. During the period under review, CFLP's net fixed assets in operation are expected to increase from Cr\$35,089 million to Cr\$66,427 million, or by about 89 percent. Its fully revalued long-term debt of Cr\$17,642 million at December 31, 1965 is expected to reach its maximum level of Cr\$32,734 million by 1969 and decrease to about Cr\$31,765 million in 1970.

- * 70 In order to maintain a satisfactory financial position throughout the future it was agreed during negotiations to include a debt limitation covenant in the Loan documents. This covenant requires that CFLP's long-term debt outstanding at the end of any given year be limited to a maximum of two-thirds of the total fixed assets. Such debt includes actual debt drawdowns rather than the amount of the loan contracts, the current 12-month portion of such debt carried in the books as current liabilities and any short-term loans not incurred in the ordinary course of business.

71 Annex 6 shows that CFLP could keep within this limitation as the percentage of its fully revalued long-term debt to net revalued fixed assets including work in progress is about 50 percent during the four-year period, 1965-1968, and then decreases to 48 percent and 47 percent in 1969 and 1970 respectively. This assumes that CFLP will continue to revalue its investment to reflect the true value of both its fixed assets and long-term loans.

IX CONCLUSIONS

- * 72 The project, consisting of transmission and distribution expansion, is technically and economically sound.
- * 73 The arrangements for engineering, procurement, and construction are satisfactory. CFLP is capable of carrying out the project with the assistance of CAEEB and the consultants, and of operating the facilities thereafter.
- * 74 Funds necessary to complete the project, in addition to those made available by the proposed Bank loan, are to be provided by Eletrobras.
- * 75 Under the Brazilian tariff regulations which permit power companies to earn a 10% return on revalued assets, CFLP should be able to achieve and maintain a strong financial condition.

76 The project would be suitable for a Bank loan of US\$8.1 million equivalent for a term of 20 years, including a 5 year grace period.

December 1, 1966

CENTRAIS ELETRICAS BRASILEIRAS S A (ELETROBRAS)

- * 1 Centrais Eletricas Brasileiras S A (Eletrobras) was formed in 1961 by the Federal Government pursuant to legislation enacted by Congress that year and commenced operations in June 1962 following approval of its By-Laws by Government decree. It is administered by a President and Board of Directors, appointed for a term of three years by the Government.
- * 2 It is empowered to carry out power development studies, to finance, construct and operate electric power generating plants and transmission lines and directly or through subsidiaries to take such actions as are necessary to initiate the supply of electric power in the event of actual or prospective shortages.
- * 3 Eletrobras has developed along lines leading to two main functions. It is the holding company owning the major interest in electric power utilities of the Federal Government. These include the former AMFORP companies, FURNAS (Central Eletrica de Furnas S A) and CHESF (Companhia Hidro Eletrica do Sao Francisco). It also administers public funds for the expansion of federal power systems, for the expansion of non-federal utilities in appropriate cases and to initiate power development programs in underdeveloped areas of the country.
- * 4 Eletrobras obtains funds from several sources, the most important of which are the Sole Tax and the Compulsory Loan levied on electricity consumer accounts. The former is a direct tax and the rates per kwh consumed are fixed percentages of the "fiscal rate" which is an average overall rate per kwh sold throughout the entire country. Since August 1966 the percentages are 5 percent for rural consumers, 17½ percent for residential and industrial consumers and 20 percent for all other consumers.
- * 5 Commencing in July 1965 electricity consumers were required to purchase obligations of Eletrobras in amounts equal to the Sole Tax. Since August 1966 the terms of such obligations are 6 percent interest and a 20 year maturity. These obligations will also be revalued each year based on the annual coefficients published by the National Economic Council and interest and redemption payments will be made on such values.
- * 6 Eletrobras receives 40 percent of the proceeds of the Sole Tax and the entire proceeds of the Compulsory Loan. Other sources of revenue include the receipts from a percentage of federal excise tax collections and custom assessments, interest on earnings, the proceeds of bond issues and Government allocations.
- * 7 Eletrobras finances power projects by subscribing to capital shares and through the medium of long-term debt and short-term loans. The funds available for investment in 1965 were estimated at Cr\$144,000 million (US\$65 million). In view of the ad valorem nature of the Sole Tax and Compulsory Loan, the funds available should increase each year as the result of increasing sales and higher tariffs.

BRAZIL
APPRAISAL OF TRANSMISSION AND DISTRIBUTION PROJECT
COMPANHIA FORÇA E LUZ DO PARANÁ (CFLP)

Generation and Sales of Energy - Past Record and Forecast

	<u>Millions KWH</u>									
	ACTUAL					FORECAST				
	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
	<u>GENERATION & PURCHASES</u>									
Existing Generation	236	239	244	267	272	265	230	230	250	250
Power Purchases			18	21	28	60	138	170	180	220
TOTAL	236	239	262	288	300	325	368	400	430	470
	<u>SALES</u>									
Sales	203	203	223	240	245	270	300	325	350	380
Losses	33	36	39	48	55	55	68	75	80	90
TOTAL	236	239	262	288	300	325	368	400	430	470

November 17, 1966

BRAZILAPPRAISAL OF TRANSMISSION AND DISTRIBUTION PROJECTCOMPANHIA FORÇA E LUZ DO PARANÁ (CFLP)Estimated Cost of the Project

	<u>Bank</u> <u>Financing</u>	<u>Local</u> <u>Financing</u>	<u>Total</u> <u>Cost</u>
	(Thousands US\$ Equivalent)		
<u>TRANSMISSION</u>			
Equipment and materials	2,000	1,080	3,080
Labor and Transport		180	180
Engineering Services	30	140	170
Total	<u>2,030</u>	<u>1,400</u>	<u>3,430</u>
<u>SUBSTATIONS</u>			
Equipment and Materials	900	50	950
Labor and Transport		110	110
Engineering Services	20	50	70
Total	<u>920</u>	<u>210</u>	<u>1,130</u>
<u>DISTRIBUTION</u>			
Distribution Transformers	700		700
Distribution Vaults		650	650
Conductor	1,800		1,800
Concrete and Wood Poles		350	350
Other Equipment & Materials	280	100	380
Labor and Transport		2,600	2,600
Engineering Services	70	240	310
Total	<u>2,850</u>	<u>3,940</u>	<u>6,790</u>
<u>OTHER EQUIPMENT</u>			
Additional Generator	770		770
Meters	500	50	550
Communication Equipment	90		90
Other Equipment	160	400	560
Labor and Transport		330	330
Total	<u>1,520</u>	<u>780</u>	<u>2,300</u>
<u>CONTINGENCIES</u>			
	<u>780</u>	<u>870</u>	<u>1,650</u>
GRAND TOTAL	<u>8,100</u>	<u>7,200</u>	<u>15,300</u>

November 18, 1966

BRAZIL
COMPANHIA FORÇA E LUZ DO PARANÁ
ACTUAL AND ESTIMATED INCOME STATEMENTS

(in millions of Cruzeiros)

Year Ending December 31	Actual					Estimate ^{1/}				
	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Units sold - million kwh	203	202	223	240	245	270	300	325	350	380
Average price per kwh (in Cruzeiros)	1 50	2 57	6 29	13 55	31 95	45 41	49 40	55 07	53 52	51 83
<u>Operating Revenues</u>										
Sale of energy	305	519	1,402	3,252	7,828	12,252	14,821	17,898	18,732	19,695
<u>Operating Expenses</u>										
Purchased power			219	542	1,540	3,210	5,796	7,140	6,300	6,160
Operations and maintenance	223	443	934	1,405	2,128	3,833	3,116	3,376	3,585	3,805
Depreciation	24	24	33	101	576	1,676	1,924	2,407	2,901	3,241
Reversion					322					
Revaluation and income taxes	12			2	425	771	255	281	363	460
Loss on foreign exchange	46	224	232	1,756	40					
Total operating expenses	305	691	1,418	3,806	5,031	9,490	11,091	13,204	13,149	13,666
<u>Operating Income or (Loss)</u>	-	(172)	(16)	(554)	2,797	2,772	3,730	4,694	5,583	6,029
<u>Net Other Income or (Expense)</u>	100	6	2	23	(95)	10	10	10	10	10
<u>Gross Income or (Loss) before Interest</u>	100	(166)	(14)	(531)	2,702	2,782	3,740	4,704	5,593	6,039
<u>Interest Charges</u>										
Export/Import Bank loan	46	61	83	178	235	233	211	181	169	147
Eletrobras loan (former AMFORP debt)	103	160	207	614	1,274	1,544	1,544	1,530	1,467	1,405
Eletrobras - other loans						58	58	58	58	57
Other loans		8	12	12	6					
Proposed IBRD loan						35	386	767	1,041	1,079
Total interest charges	149	229	302	804	1,515	1,870	2,199	2,536	2,735	2,688
Less interest charged to construction	5				1	18	260	340	127	
Net interest charges	144	229	302	804	1,514	1,852	1,939	2,196	2,608	2,688
<u>Net Income (or Loss)</u>	(44)	(395)	(316)	(1,335)	1,188	930	1,801	2,508	2,985	3,351
Less Provision for legal reserve					59	47	90	125	149	168
Cash dividends declared					542	955	1,542	2,416	3,470	2,854
Add Income adjustments of prior years			447							
Application of net revaluation to previous year's deficit				101						
<u>Balance to Surplus</u>	(44)	(395)	131	(1,234)	587	(72)	169	(33)	(634)	329
Rate of return (operating income excluding revaluation and income taxes to average net fixed assets in operation)						10%	10%	10%	10%	10%
Times total interest charges covered by operating income						1 5	1 7	1 9	2 0	2 2

^{1/} Estimates are based on a constant exchange rate of Cr\$2,220 to US\$1

November 8, 1966

BRAZIL
COMPANHIA PAULISTA DE FORÇA E LUZ
ESTIMATED SOURCE AND APPLICATION OF FUNDS STATEMENTS 1/
(in millions of Cruzeiros)

<u>Year Ending December 31</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>Summary 1966-1970</u>
<u>SOURCES OF FUNDS</u>						
<u>Internal Cash Generation</u>						
Operating income	15,959	22,224	30,285	37,871	41,545	147,884
Depreciation	9,265	11,045	14,975	18,943	21,556	75,784
Total internal cash generation	<u>25,224</u>	<u>33,269</u>	<u>45,260</u>	<u>56,814</u>	<u>63,101</u>	<u>223,668</u>
<u>Borrowings</u>						
USAID loan	21,460	16,800	2,460			40,720
Proposed IBRD loan	6,660	31,080	33,300	19,980		91,020
Total borrowings	<u>28,120</u>	<u>47,880</u>	<u>35,760</u>	<u>19,980</u>		<u>131,740</u>
<u>Equity Investments</u>	<u>19,000</u>	<u>50,000</u>	<u>40,000</u>	<u>41,000</u>	<u>25,000</u>	<u>175,000</u>
<u>Contributions in Aid of Construction</u>	<u>1,512</u>	<u>1,800</u>	<u>2,000</u>	<u>2,100</u>	<u>2,200</u>	<u>9,612</u>
<u>Other Income</u>	<u>50</u>	<u>50</u>	<u>50</u>	<u>50</u>	<u>50</u>	<u>250</u>
Total Source of Funds	<u>73,906</u>	<u>132,999</u>	<u>123,070</u>	<u>119,944</u>	<u>90,351</u>	<u>540,270</u>
<u>APPLICATIONS OF FUNDS</u>						
<u>Construction Expenditures (excluding interest charged to construction)</u>						
IBRD transmission and distribution project	14,670	70,150	76,120	47,080		208,020
Peixoto project	25,100	25,200	6,400			56,700
Subsequent normal expansion				24,200	37,400	61,600
Other construction	13,200	4,400	2,200			19,800
Total construction expenditures	<u>52,970</u>	<u>99,750</u>	<u>84,720</u>	<u>71,280</u>	<u>37,400</u>	<u>346,120</u>
<u>Debt Service</u>						
<u>Amortization</u>						
Export/Import Bank loans	4,103	4,103	4,103	4,103	4,103	20,515
U S AID loan			2,628	2,628	2,628	7,884
Eletrobras loan (former AMFORP debt)			1,918	1,918	1,918	5,754
Eletrobras - other loans					39	39
Other loans	343					343
Total amortization	<u>4,446</u>	<u>4,103</u>	<u>8,649</u>	<u>8,649</u>	<u>8,688</u>	<u>34,535</u>
<u>Interest</u>						
Export/Import Bank loans	2,194	2,003	1,812	1,618	1,427	9,054
U S AID loan	799	1,933	2,463	2,493	2,350	10,038
Eletrobras loan (former AMFORP debt)	6,234	6,234	6,171	5,923	5,672	30,234
Eletrobras - other loans	250	250	250	250	247	1,247
Other loans	35					35
Proposed IBRD loan	404	1,590	3,400	5,181	5,461	16,036
Total interest	<u>9,916</u>	<u>12,030</u>	<u>14,096</u>	<u>15,465</u>	<u>15,157</u>	<u>66,644</u>
Total debt service	<u>14,362</u>	<u>16,113</u>	<u>22,745</u>	<u>24,114</u>	<u>23,845</u>	<u>101,179</u>
<u>Dividends</u>	<u>2,982</u>	<u>3,587</u>	<u>10,174</u>	<u>16,765</u>	<u>25,057</u>	<u>58,565</u>
<u>Increase in Working Capital</u>	<u>3,499</u>	<u>11,133</u>	<u>6,591</u>	<u>8,331</u>	<u>4,359</u>	<u>33,913</u>
Total Application of Funds	<u>73,813</u>	<u>130,583</u>	<u>124,230</u>	<u>120,490</u>	<u>90,661</u>	<u>539,777</u>
Surplus cash	93	2,416	(1,160)	(546)	(310)	493
Balance at beginning of year		93	2,509	1,349	803	
Balance at end of year	93	2,509	1,349	803	493	
Times annual debt service covered by internal cash generation	1.8	2.1	2.0	2.4	2.6	

1/ Estimates are based on a constant rate of exchange of Cr\$2220 to US\$1

BRAZIL
 COMPANHIA FORÇA E LUZ DO PARANÁ
 ACTUAL AND ESTIMATED BALANCE SHEETS
 (in millions of Cruzeiros)

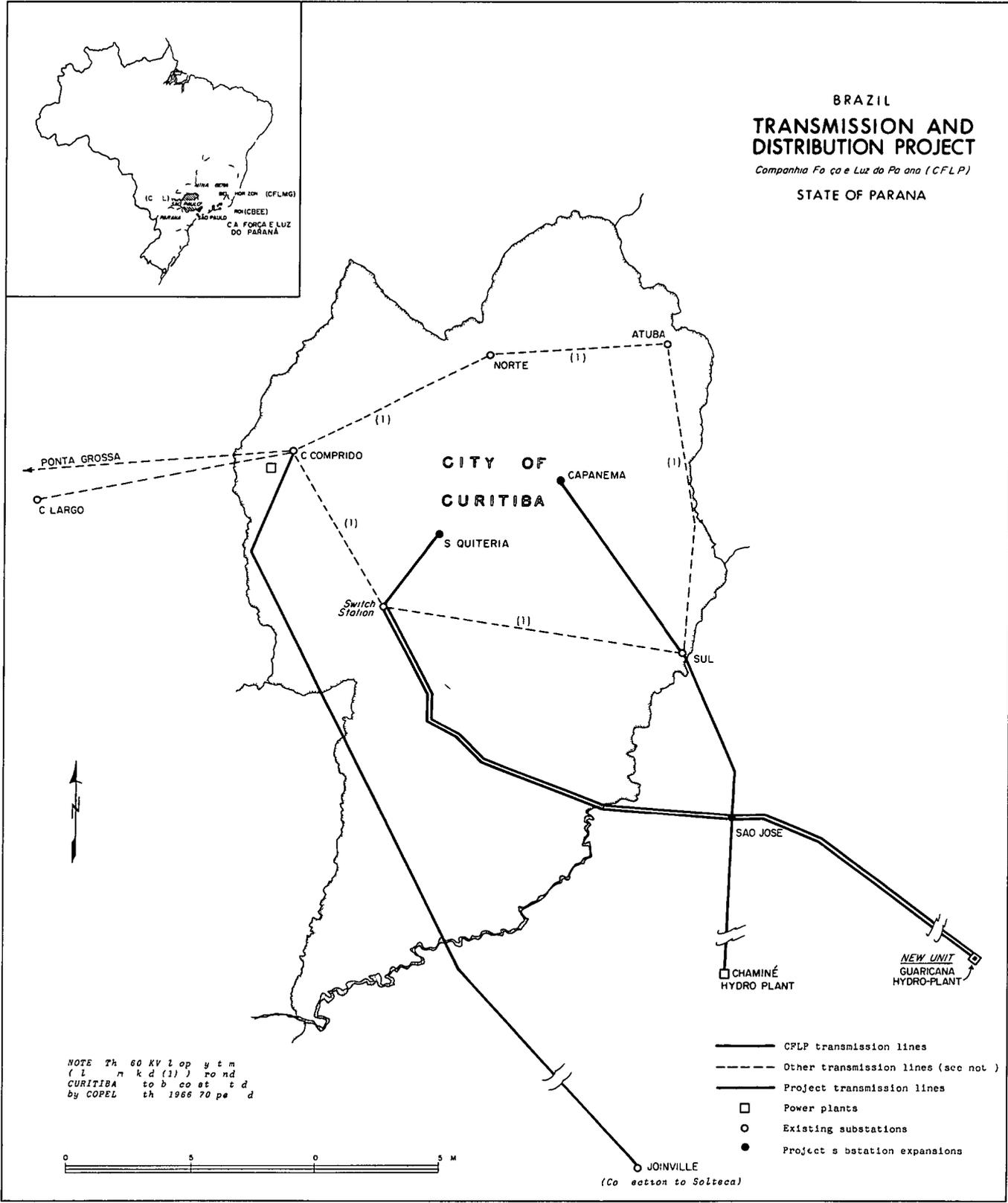
December 31	Actual					Estimate ^{1/}					
	1961	1962	1963	1964	1965 ^{2/}	1965 ^{3/}	1966	1967	1968	1969	1970
ASSETS											
Fixed Assets											
Fixed assets in operation	1 589	1 622	4 641	18 340	32 265	40 709	43 070	53 154	67 199	77,873	84 196
Less reserve for depreciation	235	258	652	2 372	4 548	5 620	7,296	9,220	11 627	14,528	17 769
Net fixed assets in operation	1 354	1 364	3 989	15 968	27 717	35 089	35 774	43 934	55 572	63 345	66 427
Work in progress	18	22	1	4	222	222	2 139	7,945	6,100	4,573	1 750
Total fixed assets	1 372	1 386	3 990	15 972	27 939	35 311	37 913	51 879	61 672	67 918	68 177
Investments	14	19	32	99	95	95	95	95	95	95	95
Net Deferred Charges	90	32	496	144	324	324	324	324	324	324	324
Current Assets	85	121	245	1 497	2 941	2 941	3 241	4 494	5 668	7 031	7 076
Additional Assets							670	683	502	182	300
Total Assets	1,561	1 558	4 763	17,712	31,299	38,671	42,243	57,475	68,261	75,550	75,972
CAPITAL AND LIABILITIES											
Capital											
Share capital	310	310	310	10 850	10 850	10 850	19 098	25 698	30 198	34 698	35 678
Surplus (deficit)	163	(232)	(101)	(1 335)	587	587	515	684	651	17	346
Reserves											
Reversion reserve					322	322	322	322	322	322	322
Legal reserve	24	24	24	24	83	83	130	220	345	494	662
Revaluation reserve				294	2,342	6 848					
Contingencies and miscellaneous reserves	11	110	227	933	44	44	44	44	44	44	44
Total capital	508	212	460	10,766	14,228	18,734	20,109	26,968	31,560	35,575	37 052
Contributions in Aid of Construction	22	41	96	173	361	361	549	749	959	1,179	1,409
Long Term Debt											
Export/Import Bank loan	305	283	1 240	1 484	4 026	4 831	4 347	3 863	3 379	2 895	2 411
Eletrobras loan (former AMPORP debt)	447	469	1 978	2 571	9 902	11 882	11 882	11 406	10 930	10 454	9 978
Eletrobras - other loans					445	445	445	445	445	436	418
Other loans	39	52	20								
Proposed IBRD loan							1,780	9,550	15,320	17 980	17 628
Total long-term debt	791	804	3,238	4,055	14,373	17,158	18,454	25,264	30,074	31,765	30 435
Current Liabilities											
Current creditors and accruals	172	316	748	2 478	1 392	1 392	1 692	1 992	2 292	2 592	2 892
Cash dividends payable					542	542	955	1 542	2 116	3,470	2 854
Long-term debt due within one year	68	185	221	240	403	484	484	960	960	969	1,330
Total current liabilities	240	501	969	2,718	2,337	2,418	3,131	4,494	5,668	7,031	7,076
Total Capital and Liabilities	1,561	1,558	4,763	17,712	31 299	38,671	42,243	57,475	68,261	75,550	75,972
Assets Test	Percentage of long-term debt including long-term debt due within one year to total fixed assets					50 0%	50 0%	50 5%	50 3%	48 2%	46 6%

^{1/} Estimates are based on a constant exchange rate of Cr\$2 220 to US\$1

^{2/} Based on 1964 coefficient values

^{3/} Based on 1965 coefficient values

BRAZIL
TRANSMISSION AND DISTRIBUTION PROJECT
Companhia Força e Luz do Paraná (CFLP)
STATE OF PARANÁ



NOTE The 60 KV L o p y t m
 (l i n e k d (1)) r o n d
 CURITIBA to b e c o m p l e t e d
 by COPEL th 1966 70 p e r d

JOINVILLE
 (Connection to Solteca)