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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

APPRAISAL OF

ITALIAN

INDUSTRIAL AND POWER PROJECTS

March 26, 1959

Department of Technical Operations

CURRENCY EQUIVALENTS

U.S. $	=	625 Lire
1 Lira	=	0.16 U.S. cents
1 million Lire	=	U.S. $1,600
1 billion Lire	=	U.S. $1.6 million

All tons are metric tons.

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APPRAISAL OF

ITALIAN

INDUSTRIAL AND POWER PROJECTS

SUMMARY AND CONCLUSIONS

In connection with the loan under consideration, the Government of Italy submitted a number of projects in the categories of industry and electric power. All these projects were either an integral part of the development program for the south of Italy being carried out by the Cassa per il Mezzogiorno or directly related to the objectives of that program.

These projects have been investigated and three of them have been selected as the basis for loans totaling $40 million equivalent. It is proposed that the European Investment Bank and the IBRD would each lend $20 million equivalent. The projects selected, and the amount of the proposed IBRD loan allocated to each of them, are shown below:

		Total Financing		Proposed IBRD Financing	
		-- ($ million equiv.) --			
Industry 1/					
SINCAT 2/	(Fertilizers and Chemicals)	14.0		7.0	
CELENE 2/	(Petrochemicals)	8.0		4.0	
	Total Industry		22.0		11.0
Electric Power					
SME 3/		18.0		9.0	
	Total Power		18.0		9.0
	Total		$40.0		$20.0

The selected projects have been investigated in the field by IBRD and EIB staff members. They all meet established needs of high economic priority. The Mercure power project, 190 kilometers southeast of Naples, is needed to meet the growing demand for power stemming from the industrial growth of southern Italy. The two industrial plants, both in Sicily near Augusta, will complement other projects in the Cassa program proper, which is primarily concerned with large public works in the fields of agriculture, transport and public health and the fostering of small industrial undertakings.

1/ Societa Catanese S.p.A.
2/ S.p.A. CELENE
3/ Societa Meridionale di Elettricita

The projects are all well planned. The estimates of their cost are reasonable. Their engineering is in good hands. Their management is sound. Satisfactory arrangements have been made to provide the funds which will be needed in addition to the proposed IBRD and EIB loans. The financial structure of each company is sound.

It is proposed that both the IBRD loan and the EIB loan be made to the Cassa, with the guarantee of the Italian Government. For the electric power project, the Cassa would relend the amount allocated to the power company concerned. The company would undertake various obligations to carry out the project, supply information about progress, etc., in a Project Agreement. The amounts allocated to the two industrial projects would be relent by the Cassa to the Istituto Regionale per il Finanziamento alle Industrie in Sicilia (IRFIS) which in turn would conclude a loan agreement with each of the companies concerned. IRFIS would bear the normal commercial risk and administer the industrial loan funds for the Cassa. The terms and conditions of these loans to the individual industrial companies would be subject to IBRD approval. Neither the power company nor the industrial companies would bear a foreign exchange risk. The exchange risk is normally carried by the Cassa but since the Cassa is a Government agency the risk is therefore borne by the Italian Government.

It has been assumed in appraising the projects that the loan to the power company would have a term of 20 years including a grace period of $4\frac{1}{2}$ years, and that the term of the loan to each industrial company would be 12 years, including a grace period of 4 years. On these assumptions, reasonable forecasts show that the companies concerned should earn a satisfactory return on their equity investments after paying interest on borrowed funds, and that their operations should generate sufficient cash to meet repayment installments of debt without impairing their liquidity position.

The three projects, which are individually appraised in the body of this report, are a suitable basis for loans by IBRD and EIB of $20 million equivalent each to the Cassa on terms set out in the proposed loan documents.

I. INTRODUCTION

1. In the summer of 1958, the Italian Government asked the Bank to continue its support of the 12-year program for the economic development of southern Italy under the auspices of the Cassa per il Mezzogiorno for which the Bank had already made five loans. It was proposed that a Bank loan be made in conjunction with the Cassa's entry into the New York capital market. The European Investment Bank (EIB) also expressed interest in financing Italian projects.

2. After discussions with the Italian Government, the Cassa and the EIB, the Bank informed the Italian Government that it would agree in principle to consider a loan request on the following lines:

a) the EIB share the financing of the projects equally with the IBRD;

b) the total loans from the EIB and the IBRD be limited to $40 million ($20 million each); and

c) the market operation proceed simultaneously with the IBRD and EIB loans (but the IBRD would appraise only those projects to be financed from the $40 million above).

On this basis the Bank asked that a list of projects which might be considered for the proposed loan be submitted.

3. Preliminary data on the projects were received in Washington during the winter of 1958. These data related to six power projects and eight industrial projects.

4. The preliminary data were examined and it was apparent that all of the projects could not be included within the limit of the proposed loans. In consultation with the Cassa it was agreed that only the highest priority projects would be considered and that those which did not have all plans completed should be eliminated. On the basis of these criteria only three projects remained which appeared suitable for financing; the SINCAT and CELENE industrial projects and the Mercure power project.

5. The original amounts requested for the three projects exceeded the amounts of the proposed IBRD and EIB loans. In consultation with the Cassa, revised amounts for the projects were agreed upon. The original amounts requested and the amounts recommended for allocation are compared below:

	Original Amount Requested	Recommended Allocation
	($ million)	
SINCAT	16	14
CELENE	8	8
Mercure	22	18
Total	46	40

6. The field investigation was carried out in February 1959 jointly by IBRD and EIB staff. The three projects are described and appraised in the following sections of this report.

II. INDUSTRIAL PROJECTS

A. General

7. Under Loan Nos. 50, 117, 150 and 189-IT, the Bank has provided $79.7 million equivalent for 22 industrial projects with a total estimated cost of $187 million equivalent. Nine of the projects have been completed and in operation for some time. The remainder are in an advanced stage of construction and all but two are expected to be completed during 1959. One will be completed in 1960 and the last will be completed by the end of 1961.

8. The two projects presented for consideration under the proposed loan are estimated to have a total cost of $51 million equivalent. The applications had been screened by the Sicilian regional institute (IRFIS) which would be directly responsible for the loans. The funds required would be made available to IRFIS by the Cassa out of the loans from the IBRD and EIB. The Cassa would take the foreign exchange risk but IRFIS would bear the normal commercial risks and administer the funds for the Cassa.

9. The locations of the projects are shown on the map attached.

10. SINCAT is developing an integrated chemical manufacturing complex at Priolo, Sicily, based on the locally available abundant raw materials. The first stage in development was the construction of a plant for the annual production of 100,000 tons of complex fertilizers. The cost of this stage was $13.9 million equivalent of which $5.8 million was financed from Loan No. 117-IT. This stage was completed in April 1958, nearly eight months ahead of schedule and is now operating at near rated capacity. The final cost exceeded the original estimate by 7%.

11. The second stage of development included: (1) the expansion of the complex fertilizer production, and related facilities, to 300,000 tons per year; (2) facilities for production of ammonia and ammonium salts, caustic soda, chlorine and chlorine derivatives and potash salts; (3) the opening of a mine at Sta. Catarina for the extraction of potassium-bearing ores. The cost of this stage, which is nearing completion one year ahead of schedule, is now estimated at $27.4 million equivalent of which $12.8 million is being financed from Loan No. 189-IT. It is expected that the final cost will be about 3.6% above the original estimate.

12. SINCAT is now planning a third stage which would include: (1) the entry into the petrochemical field with the production of ethylene and ethylene derivatives; and (2) a rounding out, accompanied by a minor increase in production, of its facilities for the production of complex fertilizers and related chemicals. The total cost of this third stage is estimated at $33.6 million equivalent. However, the project proposed for financing would cover only the facilities for the petrochemicals production; the expansion of fertilizer production would be financed out of company funds and other sources. For the petrochemical project, it is proposed that the IBRD and EIB jointly finance $14 million equivalent out of an estimated cost of $28.5 million equivalent.

13. The CELENE Company, under long-term agreement, would purchase ethylene from SINCAT for the production of polyethylene (10,000 tons per year), ethylene oxide and ethylene oxide derivatives at a plant to be built next to the SINCAT property. The total cost is estimated at $21.6 million equivalent and it is proposed that $8 million be financed equally from IBRD and EIB funds.

14. Except where the individual project appraisals contain statements to the contrary, the following observations apply to both projects:

a) The projects have been carefully planned and are well engineered. Construction will be supervised either by the parent companies or by experienced consulting firms. There is every reason to expect good construction and proper installation of equipment;

b) Procurement of equipment, in general, has been on the basis of active competition from suppliers in Italy and abroad. For some facilities, machinery and equipment are obtained under licensing arrangements; some may also be manufactured by associated companies;

c) The construction schedules are realistic;

d) The project cost estimates are reasonable and include adequate allowances for contingencies, interest during construction and working capital;

e) The working capital requirements have been estimated on the basis of estimated operating costs of the projects, taking into account the production cycle of each project, seasonal fluctuations and other factors affecting production and sales;

f) Should the costs exceed estimates, there is adequate assurance that the shareholders can provide sufficient funds for the completion and operation of the projects;

g) The "100% of capacity" production assumed in the forecasts is not a maximum rate; it is a normal production rate which allows sufficient time for repairs and maintenance and which can be maintained year after year. It will be possible to operate the facilities at a rate higher than the normal rate for periods which vary from product to product;

h) The estimates of sales volumes underlying the financial forecasts are reasonable in the light of the market analyses;

i) The estimates of production costs and prices are reasonable in view of present prices; the estimates of sales prices make allowance for the possibility of price declines in response to the prospective increase in domestic supply;

j) Depreciation allowances have been calculated conservatively;

k) The credit standing of the promoting shareholders has been found satisfactory by IRFIS.

15. In the interest of maintaining sound financial positions, agreements have been reached with each company on the amount of share capital and shareholders' advances to be provided, the treatment of shareholders' advances, the limitation of long-term debt in relation to equity, the limitation of dividend payments and the maintenance of adequate working capital.

16. Shareholders' advances would be subordinated to the proposed IBRD and EIB loans, and in effect be treated as share capital. They could not be withdrawn during the life of the loans. The long-term debt/equity ratio would be limited to 60:40. In both cases, the financial forecasts indicate that the ratios of debt to equity would be lower.

17. For purposes of calculation, an interest rate of 6.25% has been assumed for the proposed loans by IRFIS from IBRD and EIB funds. The repayment of the proposed loans has been assumed on the basis of level service payments, including interest and amortization. The term suggested for each loan is based on estimates of the probable economic life of equipment, taking into account the high obsolescence rate in the chemical industry, and on the expected generation of funds. The grace periods suggested for the loans correspond approximately to the length of the construction period plus a reasonable time to run in the facilities. The terms on which the loans would be made by IRFIS may differ slightly from those suggested, but in each case would be subject to IBRD approval.

18. The financial forecasts do not show any payment of dividends. Net earnings are expected to be available for dividends in each case and, subject to a provision in each agreement limiting the borrower to minimum current ratios, dividends would normally be paid out. Management policy would determine how much of future earnings would be paid out in dividends and how much together with depreciation accruals would be used to increase working capital, to retire debt, to accumulate reserves or to make additional capital investments. The earnings expected to be available for these purposes are shown as accumulated surplus; a corresponding entry is shown as "additional assets".

B. Conclusion

19. The two projects selected are suitable for financing out of the proceeds of the proposed IBRD and EIB loans, in the amounts and on the terms set out in the individual project appraisals that follow immediately.

C. Individual Project Appraisals

1. SINCAT

The Company

20. The Societa Catanese S.p.A. (SINCAT) of Palermo was established in May 1954. The share capital of SINCAT is held by Societa Industria Chimiche Edison S.p.A. (10%) and Societa Di Partecipazioni Industriali S.p.A. (90%). These two companies in turn are owned by Societa Edison which is one of the largest power concerns in Italy and which also has extensive industrial holdings.

21. SINCAT is developing an integrated chemical manufacturing center in Sicily. The first stage in the development of this complex was the installation at Priolo, north of Syracuse, of an integrated complex fertilizer plant with facilities for the production of various types of complex fertilizers and the sulphuric acid, nitric acid, and phosphoric acid required for their production. The cost of this first stage was Lit. 8.7 billion ($13.9 million equivalent) of which Lit. 3.6 billion ($5.8 million equivalent) was financed by the IBRD under Loan No. 117-IT (June 1, 1955). This project was completed during April 1958 and is now operating at near rated capacity.

22. The second stage of development included: (1) the opening of a mine at Sta. Catarina in central Sicily to extract potassium-bearing minerals; (2) the installation at Priolo of facilities to process the potash mineral and to produce anhydrous ammonia, caustic soda, chlorine, ammonium sulphate and chlorine derivatives; and (3) an expansion of the capacity of the existing facilities at Priolo for the production of fertilizer, sulphuric acid and nitric acid. The cost of this project, which is nearing completion, is estimated at about Lit. 17.7 billion ($28.4 million equivalent), of which Lit. 8 billion ($12.8 million equivalent) is being financed by the IBRD under Loan No. 189-IT (February 28, 1958).

23. The company is now planning to embark on a third stage in the development of this chemical manufacturing complex which would include (1) the installation at Priolo of a steam cracking plant, a caustic potash plant, and additional facilities to process the various fractions obtained from the cracking operation, and (2) the further expansion of chemical production facilities already financed under previous loans. The total cost of this third stage of SINCAT's program is estimated at Lit. 21 billion ($33.6 million equivalent) including working capital and interest during construction.

24. The project proposed for Bank financing covers only the new facilities to be installed; it does not include the expansion of existing facilities. The cost of the project, including working capital and interest during construction, is estimated at Lit. 17.8 billion ($28.5 million equivalent). It is proposed that Lit. 8.75 billion ($14 million equivalent) should be financed equally by the IBRD and the EIB. The balance of the cost of the third stage of SINCAT's program, which is estimated at Lit. 3.2 billion ($5.1 million equivalent) would be financed from other sources.

Description of the Project

25. The project would include the installation of: (1) a steam cracking plant with an annual capacity of about 26,000 tons of ethylene, 20,600 tons of propylene, 23,400 tons of LPG (liquid petroleum gas), 50,000 tons of high-octane gasoline and 9,000 tons of fuel oil; and (2) other facilities with annual capacities of about 8,000 tons of tetramer propylene, 2,500 tons of ethyl chloride, 5,000 tons of dichloroethane, 10,000 tons of caustic potash and 6,500 tons of chlorine.

26. Some of the most important facilities to be included in the cracking plant, e.g. the purification towers, have a larger capacity than would be required at present, and the capacity of the cracking plant for the production of ethylene could therefore be expanded from 26,000 to 50,000 tons per year at a cost of only Lit. 2.5 to Lit. 3 billion.

Expansion of Existing Facilities

27. In addition to the project, SINCAT plans to expand its existing facilities to increase annual capacity as follows:

a) complex fertilizers, from 300,000 to 350,000 tons;

b) phosphoric acid (P_2O_5) from 12,000 to 24,000 tons;

c) nitric acid (100% HNO_3) from 70,000 to 100,000 tons;

d) anhydrous ammonia from 36,000 to 50,000 tons;

e) ammonium sulphate (20% N) from 66,000 to 95,000 tons;

f) potassium sulphate (50% K_2O) from 8,000 to 25,000 tons;

g) caustic soda (100% NaOH) from 5,000 to 7,000 tons, and a proportional increase in chlorine; and

h) perchloroethylene from 5,000 to 6,000 tons.

Capacity, Investment Costs and Saleable Production

28. The capacity of SINCAT's various facilities and the investment per annual ton of capacity at the completion of each stage of the development program are shown in Annexes A1 and A2. The proposed expansion of capacity for the production of the raw materials required for the manufacture of complex fertilizers (nitric acid, high P_2O_5 formulas, and potassium sulphate) would provide at a low investment cost per ton of capacity both a more balanced supply of these raw materials for the production of fertilizers by SINCAT and supplies for other plants of the Edison group which do not now meet all of their requirements for these materials out of their own production. An estimate of saleable production is given in Annex A3.

Raw Materials, Transportation, Power and Labor

29. The raw materials to be used would include local sulphur fines, rock salt (an impurity in the kainite ore), naphtha fractions from the RASIOM refinery located nearby, local potash minerals, and phosphate rock imported from the Mediterranean area. The Priolo plant is located on the coast and has good harbor facilities (capable of handling 10,000-ton ships) as well as good rail and road connections. The large quantity of fresh sweet water required for the industrial processes (30,000 cubic meters per day) would be supplied by wells which have already been drilled and which have supplied 48,000 cubic meters per day continuously over a six-month test period. SINCAT would install one 7,500 kw steam turbine increasing total installed capacity to 12,500 kw. The balance of the electric power requirements, estimated at 215 million kwh per year, would be obtained from Sicilian power companies. About 1,600 employees would be required during normal operation. Labor is plentiful in Sicily but most of the technically trained personnel would come from the Italian mainland.

Present Status and Construction Schedule

30. In addition to the water wells, ground preparation for the third stage has been completed. The engineering designs have been prepared and quotations on the equipment have been received and analyzed. Contracts can be placed as soon as financing is arranged. It is estimated that all of the third stage facilities would be in production by the end of 1961. SINCAT has retained Stone and Webster Engineering Limited for the design, selection of equipment, installation and start-up of the ethylene plant.

Management

31. The management of SINCAT has proved able and energetic. The Edison group and the consultants, Stone and Webster, can provide any technical and managerial assistance which may be required in connection with the production and marketing of the new products.

Financing

32. The cost of the third stage program is estimated at Lit. 21 billion including interest during construction and additional net current assets of Lit. 1.0 billion[1/]. The total investment in the three stages of SINCAT's development is estimated at Lit. 47.4 billion, including interest during construction and Lit. 2.8 billion for net current assets. In addition to the production facilities of the program, the company has incurred organization expenses and has invested in additional land, workers' amenities,

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1/ The cost of the project, as defined in Para. 25, is estimated at Lit. 17.8 billion including working capital and interest during construction. For clarity and ease of presentation only the entire third stage program is considered in the discussion on financing.

furnishings and participations in associated companies. These items are shown as "Other Assets" amounting to about Lit. 7.0 billion in the pro forma balance sheet in Para. 34 below. The expected sources of financing to meet total requirements of Lit. 54.4 billion are given below (Lit. billion):

Share Capital	10.0
Shareholders' Advances	13.4
Loans - IBRD	15.975
EIB	4.375
IRFIS	1.250
Debentures	5.0
Retained Earnings	
Income	2.5
Depreciation	4.6
Total	57.1

33. Because of the rapid pace of construction, temporary shareholders' advances of Lit. 739 million in addition to the total above are expected to be made in 1959. These advances are scheduled for repayment in 1960. The debentures are or will be held by the shareholders. The 1957 series (Lit. 500 million) provide for repayment commencing in 1963 but the company has stated that arrangements will be made to postpone repayment until after the long-term bank loans are liquidated in 1970. The terms of the 1958 series (Lit. 1.5 billion) provide for repayment to start after 15 years. New series (Lit. 3.0 billion) are scheduled for issue on the same basis.

34. The estimated pro forma balance sheets on completion of the three stages of the program and after four years' operation are shown below (Lit. million):

	December 31, 1961	December 31, 1965
Fixed Assets - 1st stage	8,020	8,020
2nd stage	16,600	16,600
3rd stage	20,000	20,000
Total Fixed Assets	44,620	44,620
Less Depreciation	4,650	18,650
Net Fixed Assets	39,970	25,970
Current Assets	5,500	6,000
Other Assets	6,972	6,972
"Additional Assets" 1/	1,256	15,923
Total Assets	53,698	54,865
Current Liabilities	2,671	2,433
Share Capital	10,000	10,000
Shareholders' Advances	13,400	13,400
Associated Companies	1,972	1,972
Surplus	1,658	11,972
Loans	18,997	10,088
Debentures	5,000	5,000
Total Liabilities & Equity	53,698	54,865

1/ See Para. 18.

35. Financial forecasts for the company are given in Annex A4.

Markets

36. The wide range of products which can be manufactured by SINCAT makes it difficult to predict the exact products and amounts which will be offered for sale. For example the fertilizer section can make any formulation of simple or complex fertilizers. Other sections of the plant are equally flexible and a wide range of ammoniated, chlorinated, sulphonated and other compounds both inorganic and organic can be made. Other products could be added with small additional investments. Units also can be operated efficiently at various rates of output within certain limits. This flexibility is advantageous as it allows SINCAT to react quickly to changes in market conditions and requirements. Sales forecasts have been based on an average list of products which the company expects to make during the first years of operation.

37. An estimate of the value of the expected sales on completion of the third stage (Annex A3) indicates that over 60% of the projected income would come from fertilizers. The fertilizer market has been studied in connection with Loan Nos. 117-IT and 189-IT (Reports TO 84a and 162a). During the past two crop years, the tonnage of fertilizers consumed in Italy remained at 3.6 million tons each year. However, there was a shift toward the use of higher nutrient content fertilizers and a consequent increase in the consumption of total plant nutrients. Consumption of complex fertilizers increased from 300,000 tons in 1955-1956 to 540,000 tons in 1957-1958 amounting to 11% and 21% respectively of total nutrients applied. Italian exports of ammonium sulphate and ammonium nitrate rose from 405,000 tons in 1957 to 510,000 tons during the first 10 months of 1958. Exports of complex fertilizers have been limited due to the shortage of supplies.

38. As the production of complex fertilizer is increased only 50,000 tons over previous plans, the prospects appear favorable that SINCAT will be able to sell the whole of its output (350,000 tons) at prices forecast. The same conclusion may be applied to the outlook for sales of potassium sulphate and ammonium sulphate.

39. About 23,300 tons of ethylene will be sold annually to the nearby CELENE plant under a long-term agreement. The price of ethylene would be adjusted periodically to reflect the cost of raw materials and the selling prices of ethylene derivatives. At the outset the price would not be above Lit. 116 per kilo which is the present average price in Europe. The financial projections are based on a price of Lit. 115.

40. An adequate market seems assured for the 10,000 tons of caustic potash. Italy currently imports 6,000 - 8,000 tons annually. In addition Edison will stop production of caustic potash (1,000 tons per year) at its high cost Porto Marghera facilities.

41. Tetramer propylene will be sold to the Edison plant at Mantova to be used for the production of dodecyl benzene, a basic raw material for domestic and industrial detergents. The SINCAT product will replace tetramer now produced at Mantova, releasing those facilities for the production of other products.

42. High octane gasoline could be returned to the RASIOM refinery for the upgrading of standard gasoline or could be sold direct to distributors as the Edison group is now doing in northern Italy. Fuel oil would be used by SINCAT for steam and power generation. A ready market exists for the other ethylene derivatives (ethylene dichloride, perchloroethylene, ethyl chloride) which will be produced in varying amounts according to the availability of ethylene not absorbed by CELENE.

43. The prospects appear favorable that SINCAT will be able to sell the expected amounts of its various products at prices at least as high as those forecast. With the exception of ethylene the forecast prices are about 20% below present prices. As a matter of company policy all interchange of products among the members of the Edison group would be made at market price.

Earnings and Debt Service Coverage

44. Based on conservative estimates of manufacturing costs and sales prices, SINCAT expects to break even or show only a small profit during 1959 and 1960 as the first and second stages are brought into production. As the third stage is brought into production in 1961 income after depreciation and interest is expected to be about Lit. 1.8 billion, rising to about Lit. 3.0 billion in 1963 when all the facilities should be operating at rated capacity. This latter figure amounts to 12.2% of net sales and 12.7% on share capital and shareholders' advances.

45. Service on all long-term debt would be covered about 2.1 times; the company could maintain debt service even if sales declined 9% with a simultaneous 9% increase in operating costs.

Economic Justification

46. Sicily possesses great natural advantages for the production of both inorganic and organic chemicals. Sulphur, potash minerals, rock salt and crude oil are all available locally; a nearby refinery produces light oil fractions. Phosphate rock, the only other raw material required, can be obtained from North Africa. Labor is plentiful and SINCAT will provide employment for about 1,600 persons. SINCAT's ocean front site allows easy shipment of products to mainland Italy or to the export market. The project will bring about important import savings and export earnings although no exact calculation is possible because of the variety of products and because some products, such as complex fertilizers, are not now available for export in quantity.

Conclusions and Recommendations

47. The SINCAT project is sound and could form the basis for an IBRD loan of Lit. 4.375 billion ($7 million equivalent) and an equivalent EIB loan, both for a term of 12 years including a four years' grace period.

2. CELENE

The Company

48. The S.p.A. CELENE of Palermo was established in August 1957. The share capital of CELENE is held 50% by Societa Edison of Milan and 50% by Societa Elettrografite di Forno Allione (EFA) of Milan which produces carbon electrodes in Italy. The latter company is a wholly-owned subsidiary of Union Carbide Corporation of the U.S.A.

49. The company plans to install a plant at Priolo, north of Syracuse, Sicily to produce polyethylene and ethylene oxide and derivatives. The total cost of the project, including working capital and interest during construction, is estimated at Lit. 14.0 billion ($22.4 million equivalent) and it is proposed that Lit. 5 billion ($8 million equivalent) should be financed equally by the IBRD and the EIB.

Description of the Project

50. The CELENE project includes the installation of two main plants, one for the production of 10,000 tons per year of high pressure polyethylene and the second for the production of 16,000 tons per year of ethylene oxide.

51. Facilities would also be installed for the further processing of most of the ethylene oxide into the following intermediate and finished products annually; about 6,000 tons of ethylene glycols, about 2,500 tons of ethanolamines, about 13,500 tons of other ethylene oxide derivatives such as ethers, esters, etc. It is expected that about 1,500 tons of ethylene oxide would be available for sale as such in the Italian market.

52. Under a long-term agreement the basic raw material, ethylene (about 23,300 tons per year) would be supplied by pipeline from the steam cracking plant of SINCAT which is to be installed a few hundred feet away from the CELENE plants. SINCAT would also provide the 3,000 cubic meters of water per day and the electric power required by CELENE. About 630 employees will be required when the plant is in normal operation. Labor is plentiful in Sicily, but most of the technically trained personnel would come from the Italian mainland.

Present Status and Construction Schedule

53. CELENE has cleared, levelled and fenced the land on which the plants would be located; railroad sidings and internal roads have been completed, and warehouses and service shops have been built or are under construction. The engineering designs for the project have been completed, and quotations on the equipment have been received and analyzed. Orders for equipment can be placed on short notice, and the plants can be finished in 1961 if the main installations can be started before June 1959.

Management

54. The Edison and Union Carbide companies can provide adequate technical and managerial assistance. The plants would be built by the Edison Company, and Carbide would provide the engineering designs for the plants as well as the know-how required for the various chemical processes to be used by CELENE. Carbide is one of the world's leading companies in the petrochemical field.

Financing

55. The cost of the project, including interest during construction, is estimated at Lit. 12 billion ($19.2 million equivalent); working capital requirements are estimated at Lit. 2.0 billion ($3.2 million equivalent). The project is expected to be financed as follows (Lit. billion):

Share Capital	4.0
Shareholders' Advances	4.0
IBRD Loan	2.5
EIB Loan	2.5
Other Loans	1.0
	14.0

56. Pro forma balance sheets on completion of the project and after four years' operation are shown below (Lit. million):

	December 31, 1961	December 31, 1965
Fixed Assets	12,000	12,000
Less Depreciation	184	3,138
Net Fixed Assets	11,816	8,862
Current Assets	2,000	2,700
"Additional Assets" 1/	184	3,133
Total Assets	14,000	14,695
Current Liabilities	-	600
Share Capital	4,000	4,000
Shareholders' Advances	4,000	4,000
Surplus	-	2,287
IBRD Loan	2,500	1,404
EIB Loan	2,500	1,404
Other Loans	1,000	1,000
Total Liabilities & Equity	14,000	14,695

57. Financial forecasts are given in Annex A-5.

1/ See paragraph 18.

Markets

58. The quantities and estimated values of the products CELENE expects to market are shown in Annex A6. The most important in terms of value are polyethylene, ethylene glycols and ethylene glycol ethers.

59. Polyethylene is a relatively new plastic material with outstanding electrical properties and high chemical resistance combined with mechanical toughness. The growth in the consumption of polyethylene has been spectacular wherever it has been introduced. In the United States consumption increased from about 68,000 tons in 1953 to 337,000 tons in 1958, a five-fold increase.

60. In 1958 the Italian consumption of polyethylene amounted to about 15,000 tons. Montecatini, the only Italian producer, had an output of 6,000 tons; the remainder was imported.

61. Several plants are under construction in Italy and 1961 production capacity is expected to amount to about 44,000 tons, although full production is not expected until 1963. Actual production in 1961 is not expected to be more than 34,000 tons. The Italian producers and their estimated annual capacities in 1961 are shown below:

	Tons
Montecatini	24,000
ABCD	10,000
CELENE	10,000
Total	44,000 1/

62. Based on reasonable assumptions of the growth, consumption in Italy should amount to 30,000 to 35,000 tons by 1961 or 1962. Domestic consumption should rise to cover all the presently known firm production within a few years.

63. CELENE's output should be competitive in price with other domestically produced polyethylene and with imports. During the early years when there may be some oversupply on the domestic market, the prospects are favorable that the surplus can be placed on the export market. However, to take account of expected price decreases when increased supplies become available, the financial forecasts have been based on average prices 15% below present domestic prices which are still determined by imported polyethylene.

64. In the case of the ethylene oxide derivatives, too, consumption has grown rapidly wherever the development of a petrochemical industry made possible the production of ethylene oxide at a relatively low cost. In Italy,

1/ This production is by the high pressure process. Solvay will also produce about 6,000 tons of polyethylene by the low pressure process but this product does not compete directly with high pressure polyethylene.

consumption of these products has been small because the available supply of ethylene oxide consisted, on the one hand, of imports and, on the other, of products manufactured domestically from the relatively high-cost ethylene oxide obtained as a coke oven by-product. CELENE's facilities for the production of ethylene oxide derivatives are flexible and many compounds other than those listed here may be produced. This will allow the company to adjust quickly to market conditions and requirements. The specific derivatives that CELENE plans to produce include:

a) Ethylene glycols - 6,000 tons. These products are used mainly as anti-freeze compounds, in the production of explosives and textiles, and as tobacco conditioners. In 1957, Italy produced 3,000 tons of ethylene glycol (ethylene oxide equivalent) and imported 2,000 tons. It is estimated, however, that consumption of ethylene glycol as an anti-freeze agent alone could reach 12,000 tons a year as soon as it could be sold at a price competitive with such other products as glycerine and ethyl alcohol which are used extensively as anti-freeze at present. CELENE expects to be able to sell its output at a profit at 20% less than the present price. At that price, it should have no difficulty in disposing of its output.

b) Ethylene glycol ethers - 8,000 tons. These products are used mainly as solvents for paint and varnish. Italy has been slow in developing a modern paint industry, and in 1957 its production and imports of ethylene glycol ethers amounted to only 1,100 tons (ethylene oxide equivalent) and 2,200 tons respectively. However, several companies have recently embarked on the production of paints and varnishes while others already in the industry are expanding their production, and demand for solvents is expected to rise very rapidly in the next few years.

c) Polyethylene glycols, ethers, esters and their derivatives - 5,500 tons. These products have a wide range of uses in detergents, cosmetics, drugs, etc. In 1957, Italian production and imports amounted to 1,000 tons (ethylene oxide equivalent) and 350 tons respectively.

d) Ethanolamines - 2,500 tons. These products are used as neutralizers in the oil industry and in the production of cosmetics, textiles, drugs,etc. Italian production and imports in 1957 amounted to 900 tons (ethylene oxide equivalent) and 700 tons respectively.

65. The polyethylene glycols and ethanolamines are relatively new to the Italian market. In effect a market must be created for the amounts planned for production. Experience shows that demand has increased rapidly in other countries as soon as the materials were readily available. CELENE is creating a direct sales organization which is already providing technical assistance to users of polyethylene and ethylene oxide derivatives using as a model the efficient sales organization for these products of Union Carbide in the United States. The key sales personnel have been trained in the United States and American experts are also helping on the spot in Italy

in the organization of the sales department. The sales group when it reaches full strength will have about 50 qualified employees. The main office is in Milan but there are plans to open branches in Rome and Naples as the market requires.

66. There seems to be little reason to doubt the company's ability to sell the expected amounts of these products at prices at least as high as those forecast which are 15% - 20% below present prices. However, in such a rapidly expanding field as petrochemicals it is possible that other companies may install similar facilities. This should be no cause for concern about the present project because of the strength of the sponsoring companies and because of the rapid growth of demand for petrochemicals in other countries as soon as adequate supplies become available.

Earnings and Debt Service Coverage

67. Financial forecasts, based on conservative estimates of earnings and operating costs, indicate that the company should break even in 1961 and 1962 when the plants will be in partial operation. In the following years, when the plant would be operating at 100% of designed capacity, net income would increase from about Lit. 730 million in 1963 to about Lit. 800 million in 1965.

68. Debt service would be covered about two times. The company could meet all its financial obligations if the plants operated at 70% of capacity.

Economic Justification

69. The erection by SINCAT of a steam cracking plant using abundant and low-priced light oil fractions from the RASIOM refinery would provide CELENE with relatively low cost ethylene from which it could manufacture raw material for a large variety of petrochemical products. Technical difficulties should be minor since CELENE would have the advice of its two parent companies, Carbide and Edison, both of which have had long experience in the petrochemical field. The close proximity of the SINCAT plant would enable CELENE to obtain other raw materials in the future and expand the range of its production. SINCAT and CELENE together would form one of the most complete chemical complexes in Europe and the erection of these two plants in Sicily would greatly benefit the region.

Conclusions and Recommendations

70. The CELENE project is sound and could form the basis for an IBRD loan of Lit. 2.5 billion ($4 million) and an equivalent EIB loan, both for a term of 12 years including a four years' grace period.

III. THE MERCURE POWER PROJECT

SOCIETA MERIDIONALE DI ELETTRICITA

A. General

71. The Government appropriations for the development program for South Italy which is administered by the Cassa cannot be used to finance power projects. To assist in the necessary expansion of power facilities to meet the rapidly increasing demand for power in this area as a result of the economic development fostered by the Cassa, a total of $84.4 million of the three Bank loans made to the Cassa in 1955, 1956 and 1958 was allocated to eight power projects. They are being carried out by four power companies (SME, UNES, SRE and SGES), either directly or through subsidiaries. These projects will provide nearly 900 MW of new generating capacity. By the end of February 1959, 464 MW of this capacity had already been put in operation.

72. The Cassa area, which comprises the southern part of the Italian mainland, Sicily and Sardinia, contains about 38% of the total population of Italy, but has only 16% of the installed generating capacity of the country. The consumption of electric energy per capita in the South amounts to about 200 kwh per year compared with 1,200 kwh per year in the North.

B. The Company

73. Societa Meridionale di Elettricita (SME) is responsible for the generation, distribution and sale of electric power in the southern part of the Italian peninsula. The total area is about 57,000 sq.kms. and has a population of 11.2 million. Part of SME's services is extended through five subsidiary companies (Pugliese, Campania, Calabria, Lucana and SEBI). SME and its five subsidiaries are known as the SME group. The main offices of the Company are located in Naples.

Organization and Management

74. The general policies of the SME group are established by a Board of Directors consisting of 18 members, including the President and the Vice President of the company. A number of the directors have a long experience in the management of power utility companies. The management consists of the President, the General Manager and three Assistant General Managers in charge of finances, construction and operations, respectively. These men have a long record of service with the company and are experienced and well qualified power utility executives. The company is well organized and managed.

Existing Facilities

75. The SME group had at the end of 1958 a total of 72 hydro plants and 3 thermal plants in operation. The total effective generating capacity amounted to 826 MW, including 607 MW hydro. About 60% of the hydro and 83% of the thermal capacity have been added to the system in the postwar period.

76. In a year with average rainfall the total production of the hydro plants is estimated at 2.5 billion kwh. Seasonal reservoir capacity in the system amounted to 286 million cubic meters corresponding to a production of 588 million kwh.

77. In addition to its own generation, SME is also purchasing power from other companies. The major supplier is the "Terni" Company. The existing contract, which expires on March 31, 1961, provides for an annual supply of 400 million kwh with a peak capacity of 88 MW.

78. SME is also a partner in the Trentina company, which operates a number of hydro plants in North Italy. In an average hydrological year, SME is assured of a supply of 146 million kwh with a peak capacity of 41 MW from Trentina.

79. During the summer months, SME normally purchases surplus hydro power from Northern Italy. These purchases are, however, partly offset by sales of surplus power by SME during the winter months.

80. SME operates an extensive transmission line network which is interconnected with the networks of the power companies operating in central and north Italy as well as in Sicily. The SME network included, at the end of 1958, 4250 km of high tension transmission lines with 1.9 million kva of substation capacity and about 27,000 km of secondary and low tension distribution lines with 0.9 kva of transformer capacity. Total number of connected consumers amounted to 2.4 million.

81. Operational statistics for the last seven years are shown in Annex B-1. The average load factor of the system in 1958 was 0.60. The losses, including own consumption and pumping requirements, amounted to 19.5% of total energy supplied to the system. Both the load factor and losses were higher than average in 1958 because of exceptionally large sales of surplus energy. Operation and maintenance of the entire system are good.

Power Market

82. In 1958 the peak load in the system was 696 MW, slightly lower than in the two previous years because of the mild weather during the last months of the year. Total sales in 1958 amounted to 3 billion kwh. During the period 1952-58 sales of energy increased at an average annual rate of 9% while the corresponding rate for the peak load was 7.6%.

83. The power market in the area served by SME is characterized by the relatively large industrial consumption. In 1958 the sales to industries totalled 1.7 billion kwh or nearly 60% of total sales. The major industries served are metals, machinery, shipbuilding, textiles, and food processing.

84. Records of sales for the period 1952-58 and forecast for the period 1959-64 by principal categories of consumers are given in Annex B-2. In future years the company expects that industrial consumption will continue to increase at a higher rate than the domestic consumption

as a result of the efforts made by the Cassa to encourage industrial development in South Italy.

85. The forecasts take into account a substantial increase in contractual sales to the UNES Company after 1961. This company is largely controlled by SME. At present it supplements generation from its own plants by purchases of power from other companies. The contracts covering these purchases expire in 1961 and SME has agreed to make available to UNES a substantial part of the power required by UNES to meet the future demand in its system.

86. Total sales by SME are, therefore, expected to continue to increase at an average annual rate of 9% during the next 5 years and amount to 5.3 billion kwh in 1964. The estimated peak load in this year would be 1,320 MW, based on a load factor of 0.55.

Construction Program

87. The details of the construction program planned by SME during the period 1959-64 are given in Annex B-3. It is designed to provide the necessary generation, transmission and distribution facilities required to meet the expected increased demand for power in the area served by the SME group.

88. The new capacity is scheduled to come into operation as follows:

Year	Hydro MW	Thermal MW
1959	52	137
1960	5	
1961		150
1962	38	150
1963	50	70
1964	50	140
1965 and later	50	300
Totals	245	947

89. The total cost of the part of the program to be carried out between 1959 and 1965 is estimated at Lit.156 billion ($250 million). In addition to its own construction program, SME is also planning to make additional investments in companies other than its subsidiaries. The most important participation is in the SENN Company, which is planning the construction of a 150 MW nuclear power plant. SME's share in SENN will make available an additional 37 MW of generating capacity.

90. As shown in Annex B-4, the new capacity to be added to the system is consistent with the estimated increase in peak load and would provide a reasonable amount of reserve capacity in the system. The program as a whole is justified on the basis of expected needs of the system.

C. The Project

Power Plant

91. It is proposed that, within the construction program of the SME group, the 210 MW Mercure thermal power plant project should be the basis for a loan of $18 million equivalent from the Cassa out of IBRD and European Investment Bank funds in equal parts.

92. The project will be located on the Mercure river about 190 km southeast of Naples (see map attached) near the existing Rotonda substation, the main connection point of the 220 kv and 150 kv transmission line network in Southern Italy.

93. The plant will be equipped with three turbo-generator units, each with a maximum continuous output of 70 MW. The turbines will operate at a pressure of 1,950 lbs per sq.inch and at a temperature of 1000°F. Three boilers of the outdoor type will be provided. They will be designed to burn pulverized brown coal but with the possibility of making necessary adjustments to permit the burning of heavy fuel oil or natural gas as auxiliary fuels. Each boiler will produce 0.5 million lbs. of steam per hour. The cooling system will be fed from a water intake on the Mercure river and will include two cooling towers.

94. An outdoor substation with three three-phase transformers will be provided and connected to existing 220 kv and 150 kv transmission lines. An additional 220 kv transmission line between Mercure and Naples will be required when the second unit of the Mercure plant comes into operation. This line is included in the construction program planned by SME.

Brown Coal Mining

95. Fuel for the operation of the Mercure plant will be obtained from the brown coal deposits located close to the plant site. Detailed explorations have been carried out and have been reviewed by qualified consultants (J.W. Woomer and Associates of Pittsburgh) retained by SME. The results show proven reserves totalling 42 million tons. Of this, about 22 million tons can be worked by open pit stripping and the rest by underground mining. Based on a recovery of 85% by stripping and 50% by underground mining, total recovery is estimated at about 30 million tons, sufficient for at least 25 years operation of the plant assuming an annual generation of 700 million kwh. Additional explorations being carried out indicate that the proven reserves may be larger than those established at present.

96. During the first four-five years, mining will be confined to open pit operations. Depending upon the final estimate of open pit reserves, a decision must be taken within the first three-four years whether or not an underground operation must be developed. The present project includes only the investment required for open pit mining but all calculations of fuel cost have been based on a combined open pit underground mining operation. The studies carried out by the consultants confirm that the strip mining is technically feasible using either bucket-

type excavators or draglines for removing the overburden and power shovels for the excavation of the coal. If bucket-type excavators are used the coal will be transported to the power plant by conveyors and in the latter case by trucks. Preliminary estimates show that the investment in both cases will be about the same, and the final decision will be made by SME after detailed studies of the firm bids which will be obtained on an international basis.

Status of the Project and Schedule of Construction

97. For the power plant, general planning has been completed. The detailed specifications are under preparation and bids for major pieces of equipment are to be invited by the middle of 1959. Two of the generating units are scheduled to come into operation during 1963 and the third unit in 1964.

98. The consultants final report on a mining plan is expected to be ready in April 1959, and bids for equipment will be invited. Preliminary mining operations will be started towards the end of 1961.

Estimated Cost

99. The total cost of the project is estimated as follows: (for details see Annex B-5)

	Million Lire	Million US$ Equivalent
Coal Mining	4,000	6.4
Power Plant	16,500	26.4
Overhead, Contingencies and Interest	4,500	7.2
Total	25,000	40.0

100. The estimate is realistic. For the mining part, it is based on the studies made by the consultants and on quotations received by SME on mining equipment.

101. For the power plant, the estimates are based on the actual costs of the Bari thermal plant which has been recently commissioned. The capital cost per installed kw, for the thermal plant, amounts to $150 equivalent. This is reasonable for a plant of this type.

Schedule of Expenditures

102. The expenditures on the Mercure project are scheduled to be incurred as follows: (in billion lire)

1958	1959	1960	1961	1962	1963	1964	Total
0.5	1.3	4.2	5.0	5.0	5.3	3.7	25.0

D. Economic Aspects

103. It is estimated by SME that the average annual production of the Mercure plant will amount to 700 million kwh. This is based on the assumption that two units (140 MW) will operate on base load during the day and produce annually 600 million kwh. The third unit will be used as a reserve and operate during periods of low water availability. The average plant factor would be 0.40.

104. As shown in detail in Annex B-6, the cost of power from the Mercure plant, including transmission to Naples, would amount to Lit.6.90 (11 US mills) per kwh. The calculated fuel cost of Lit.2.50 (4 U.S. mills) per kwh is based on the preliminary mining plan and estimate of mining costs prepared by the consultants to SME. The mining plan assumes that underground mining would have to be started in the fifth year of operation.

105. The estimated average cost of coal delivered to the power plant of Lit.1,740 per ton takes account of the additional investment required to develop underground mines. It is, however, likely that further explorations will confirm the availability of additional reserves which can be exploited by stripping methods and this would result in lower average fuel costs.

106. The estimates include a liberal allowance for maintenance, and wages have been assumed at a level 50% higher than those prevailing at present in the area. The fuel costs are, therefore, conservatively estimated.

107. The alternative to SME, if the Mercure project were not to be carried out, would be to construct a plant to burn imported heavy fuel oil or coal. This plant would probably be located at the sea close to Naples, which is the most important load center in the SME system. Based on the cost of the Bari thermal plant, which has the same capacity as the proposed Mercure plant, and on the present price for fuel oil, the production cost of the alternative plant would amount to Lit.7.40 (11.8 U.S. mills) per kwh. (For details see Annex B-6)

108. The calculations show that power produced by the Mercure plant, using the available deposits of brown coal, would be cheaper than the power produced by a conventional plant burning imported fuel oil. The return on the additional investment required is estimated at 12.5 per cent.

109. It has to be taken into account that the price of fuel oil used in the calculations includes a government tax of 14 per cent. Deducting this tax, the cost of power from the alternative plant would be reduced to Lit.7.05 (11.2 US mills) per kwh, and the return on the additional investment would be reduced to 6.5%.

110. The Mercure plant will save the Italian economy substantial amounts of foreign exchange every year by the utilization of a domestic resource in lieu of imported fuel oil. The brown coal deposit can only be used in this way. It should also be noted that the Italian Government has given this project a high priority because its construction and future operations will create employment in one of the most depressed labor areas in Southern Italy.

E. Financial Aspects

Power Rates

111. Power rates in Italy have been subject to Government control since 1936. An Interdepartmental Price Committee (CIP) was established in 1944 and given authority to issue regulations regarding rates. Several rate increases were authorized between 1946 and 1952, providing a total increase of about 400 per cent.

112. In order to avoid a further general increase, CIP established in 1953 a special fund to compensate the power companies for the increase in their production costs. The income of this "equalization fund" was provided by a surcharge payable by industrial consumers. In January 1957, both the contributions to be paid by the fund and the surcharge paid to the fund were reduced by 50%. At the same time, CIP issued new maximum and minimum rates for industrial consumers. The net result of the new regulations for SME was an increase of about 12% in the company's average revenue per kwh.

113. Although tariffs have remained unchanged since January 1957, it is reasonable to assume that the companies will be able to establish higher rates in new industrial power contracts in future years. SME expects an increase of about 5% in its average revenue per kwh over the period 1959-1964. The financial forecasts, however, have been based on the conservative assumption that the present rates would remain unchanged throughout this period.

114. In addition to revenues from sales of electricity, power companies in Italy receive from the "equalization fund" a special contribution for power produced by new power plants. The companies also receive a relatively small subsidy from the Government for new power plants located in Southern Italy. Detail of these payments is given in Annex B-7.

Financial Structure and Present Debt of SME

115. SME was founded in 1893 with an initial share capital of Lit. 1 million, 60% of which was subscribed by French-Swiss interests. The ownership remained entirely private until 1931, when IRI, a government holding institution, acquired a minority interest sufficient to exert effective control of the company. In 1952, the Government created "Finelettrica" as a subsidiary to IRI to manage its holdings in various power companies.

116. The present share capital of SME totals Lit.74.98 billion, of which over 36% is owned by the Government. As of July 10, 1958, the principal shareholders were the following:

	% of share capital
Finelettrica and IRI	36.3
Bastogi group 1/	13.7
Soc.Financiere Italo-Suisse	4.8
Hentsch & Co.	2.5
	57.3

117. The remainder was held by about 30,000 shareholders. The shares are quoted on the stock exchanges in Rome, Milan, Zurich and Geneva.

118. Consolidated balance sheets of SME for the last 4 years are given in Annex B-8. Net fixed assets in operation at the end of December 1958 amounted to Lit.116 billion. Successive revaluations authorized in the postwar period have resulted in a net write-up of assets of about Lit.68.2 billion, of which Lit.38.3 billion has been capitalized by the issue of bonus shares. At the end of 1958, a balance of Lit.29.9 billion remained in the revaluation account.

119. At that time, the total debt of SME amounted to Lit.46.7 billion of which Lit.35.9 billion was long-term and Lit.10.7 billion short-term. As customary for power companies in Italy, SME uses commercial bank credits to cover part of its construction expenditures. Although legally short-term, these credits are continually renewed and constitute a permanent floating debt, the size of which varies with requirements from time to time. The ratio of total debt (including short-term) to equity as of December 31, 1958 was 30/70. This is a satisfactory ratio.

Recent Earnings of SME

120. Condensed income statements for the period 1954 to 1958 are given in Annex B-9. The company's earnings record is good. During the last 4 years, gross return on investment has been about 7%, and net return on share capital about 8%. Interest charges have been covered by gross income at least 2.5 times. Dividends ranging from 6.4% to 7.5% have been paid every year on the face value of the shares.

Financial Structure and Earnings of the SME Group

121. Consolidated balance sheets for the SME group as of the end of the years 1955-1958 are shown in Annex B-10. At the end of 1958, total net fixed assets in operation amounted to Lit.175 billion (equivalent to $259 million). The aggregate capitalization of the group was approximately as follows:

. . .

1/ A privately owned public utility holding company.

	Billions of Lire	%
Share Capital	79.61	41.6
Revaluation Account	48.35	25.2
Reserves	4.74	2.5
Total Equity	132.70	69.3
Long and medium-term debt	48.56	25.3
Floating debt	10.38	5.4
Total Debt	58.94	30.7
Total Capitalization	191.64	100.0

122. A breakdown of the long-term debt of the SME group as of December 31, 1958 is given in Annex B-11. About 47% of the total is in the form of long-term loans from "Istituto di Credito per Imprezi di Publica Utilita" (ICIPU); 38% is represented by Cassa loans from IBRD funds. Bond issues account for 7% of the long-term debt, and the balance of 8% is in medium-term loans. Most of the loans (other than from the Cassa) are secured by mortgages and special liens on specific properties. The Cassa loans are secured by suretyships given by Finelettrica and Bastogi.

123. Earnings of the SME and its subsidiaries as a group have been satisfactory. The average gross return (after depreciation) on fixed assets in operation has been at least 6% during the last several years. Interest charges other than capitalized have been covered by gross income from 2.5 to 2.7 times. This is a satisfactory coverage.

Capital Expenditures and Sources of Funds

124. Total capital expenditures of the SME group over the six years from the beginning of 1959 to the end of 1964 are estimated at Lit.156.1 billion. In addition, SME plans to invest about Lit.14.8 billion in companies outside the group. The total investments of the group for the 6-year period may be summarized as follows:

	Billions of Lire
Construction costs (SME Group)	156.1
Participations outside the SME Group	14.8
Increase in working capital	0.4
	171.3

The Mercure project, estimated to cost Lit.25 billion, accounts for about 16% of total construction expenditures during the period considered.

125. Funds required to carry out the program are expected to be obtained as follows:

	Billions of Lire	%
Net increase in floating debt	9.5)	35
Net increase in funded debt	50.8)	
Sales of new share capital	34.8	20
Internal generation of funds	76.2	45
	171.3	100

126. The increase in funded debt of Lit.50.8 billion would be the net result of new borrowings amounting to Lit.69.8 billion and amortization payments totalling Lit.19.0 billion.

127. New long-term borrowings would be obtained from the following sources:

	Billion Lire	%
Proposed IBRD-EIB Loan	11.25	16
Balance of previous IBRD Loans	17.80	26
Total Cassa Loans	29.05	42
Long-term loans from ICIPU	40.75	58
	69.80	100

128. About 19% of total construction expenditures would be covered by proposed and existing IBRD and IBRD-EIB loans.

129. Sales of capital shares are estimated to produce a total of Lit.34.8 billion in the next 6 years. In view of its favorable experience in selling new shares in recent years, SME does not expect any difficulty in raising this total amount of new capital. SME sells the shares at their par value of Lit.1,000 per share. On February 21, the market value of the SME shares was Lit.1,580.

130. The financing program is reasonable and may be considered as virtually assured. Should SME find any difficulty in securing from these sources as much as it now expects to obtain, the company would float bond issues to meet any short-fall in its sources of funds.

Forecasts of Earnings, Sources and Application of Funds

131. A forecast of income statements for the years 1959 to 1964 is given in Annex B-12 and a projection of sources and application of funds for the same period is attached as Annex B-13.

132. The estimates of revenues are based on growth of sales discussed in Section B. The SME power rates in effect at present have been used.

According to forecasts prepared by the Company, average revenues per kwh would fall from Lit.14.8 in 1959 to Lit.13.5 in 1964, because of the expected higher rate of increase in sales to industrial and other bulk consumers, compared with sales to domestic consumers.

133. Depreciation is assumed at the conservative rates of about 6.5% a year (15 years) for thermal plants and 3% a year (33 years) for hydro installations.

134. For purposes of calculation, the proposed Cassa loan out of IBRD-EIB funds has been assumed to carry an interest rate of 6% (including a service charge of 1/8% by Cassa) and to have a term of 20 years with amortization beginning in January 1964 and ending in October 1979. Other long-term borrowings have been assumed to be on the same terms and conditions as those currently obtained by SME.

Future Earnings

135. Earnings of the SME group are expected to remain satisfactory. Consolidated gross income would rise from Lit.11.3 billion in 1959 to Lit.16.5 billion in 1964. This would amount to a gross return of 6 to 6.4% on the book value of all fixed assets in operation.

136. Net profit of the group would increase from Lit.7.1 billion in 1959 to Lit.10 billion in 1964. The net return on the share capital would remain satisfactory, averaging 8.3% over the 6-year period. Dividends of 7.5% would continue to be paid on the share capital.

Interest and Debt Service Coverage

137. Interest, other than charged to construction would be covered by gross income 2.6 times on the average, from 1959 to 1964. Debt service would be covered by net receipts from operations about 3.2 times during the same period. These coverages are satisfactory.

138. Projected balance sheets as at the end of the years 1959 to 1964 are given in Annex B-14. The debt/equity ratio of the group would change from 32/68 in 1959 to 41/59 in 1964. Fixed assets of the group would amount to about Lit.261 billion, compared to Lit.175 billion at the beginning of 1959.

F. Security

139. As in the case of earlier Bank loans to the Cassa, SME has proposed that the necessary security provisions for the loan now proposed, be satisfied in the form of sureties to be given by the two holding companies, Bastogi and Finelettrica, the main shareholders of SME. These guarantors are willing to guarantee jointly and severally all the undertakings given to the Bank in the Project Agreement and obligations of SME to the Cassa in the Subsidiary Loan Agreement. The covenants of completion, maintenance and operation of the project during the life of the loan are a part of these obligations. The two holding companies are in a strong financial position. The proposed security arrangements are satisfactory.

G. Conclusions and Recommendations

140. The project to be financed by a loan from the Cassa to SME out of the proceeds of the proposed loans from the Bank and EIB is sound. Suitable arrangements have been made for its execution and operation. The estimated costs and construction schedule are reasonable. The management and organization of SME is good.

141. The company's earnings record is good. Based on present rates allowed by government regulations, the company should continue to earn enough to maintain reasonable dividends on its share capital and to service its debt. It should, therefore, be in a good position to raise the funds needed, in addition to those generated by operations, to finance necessary further expansion of its facilities.

142. Agreement has been reached with the Cassa and SME that a project agreement would be obtained by the Bank from SME.

143. In these circumstances, the Mercure project forms a suitable basis for a Cassa loan of $18 million equivalent. This amount would be obtained by the Cassa from the proposed two loans of $9 million equivalent each, to be made by the Bank and EIB.

144. The construction period of the project and estimated useful life of the structures and equipment, as well as the size of the proven reserves of brown coal, would indicate a term of the Cassa loan of 20 years, including a period of grace of 4½ years.

ANNEX A-1

CAPACITY OF SINCAT FACILITIES

MAJOR PRODUCTS
(Metric Tons per Year)

	1st Stage	2nd Stage	3rd Stage	Total
Sulphuric acid (as 100% H_2SO_4)	30,000	140,000	- -	170,000
Phosphoric acid (as P_2O_5)	12,000	- -	12,000	24,000
Nitric acid (as 100% HNO_3)	35,000	35,000	30,000	100,000
Ammonia (anhydrous)	- -	36,000	14,000	50,000
Complex fertilizers	100,000	200,000	50,000	350,000
Ammonium sulphate (20% N)	- -	66,000	29,000	95,000
Raw kainite	- -	130,000	- -	130,000
Potassium sulphate	- -	8,000	17,000	25,000
Schoenite (as wet material 18-20% K_2O)	- -	50,000	- 1/	- 1/
Caustic soda (as 100% NaOH)	- -	5,000	2,000	7,000
Perchloroethylene	- -	5,000	1,000	6,000
Caustic potash (as 100% KOH)	- -	- -	10,000	10,000
Ethylene	- -	- -	26,000	26,000
Tetramer propylene	- -	- -	8,000	8,000
Ethyl chloride	- -	- -	2,500	2,500
Ethylene dichloride	- -	- -	5,000	5,000

1/ All the schoenite is to be converted into potassium sulphate with a K_2O content of 50%.

S I N C A T

COST OF INSTALLATIONS PER ANNUAL TON CAPACITY OF MAJOR PRODUCTS

Plant	At end of First Stage			At end of Second Stage			At end of Third Stage		
	Cost (Million Lire)	Annual Capacity (1,000 Tons)	Lire Per Annual Ton	Cost (Million Lire)	Annual Capacity (1,000 Tons)	Lire per Annual Ton	Cost (Million Lire)	Annual Capacity (1,000 Tons)	Lire per Annual Ton
Sulphuric Acid (as 100% H_2SO_4)	1,000	30	33,300	2,600	170	15,300	-	-	-
Phosphoric Acid (as P_2O_5)	900	12	75,000	-	-	-	1,200	24	50,000
Nitric Acid (as 100% HNO_3)	800	35	22,800	1,550	70	22,100	2,050	100	20,500
Ammonia (anhydrous)	-	-	-	2,500	36	70,000	3,500	50	70,000
Complex Fertilizers	1,100	100	11,000	3,100	300	10,300	3,250	350	9,300
Ammonium sulphate (20% N)	-	-	-	350	66	5,300	390	95	4,100
Caustic soda (as 100% NaOH)	-	-	-	800	5	160,000	1,000	7	143,000
Perchloroethylene (tech. grade)	-	-	-	900	5	180,000	1,000	6	167,000
Caustic potash (as 100% KOH)	-	-	-	-	-	-	1,000	10	100,000
Cracking plant (based on ethylene)	-	-	-	-	-	-	5,000	28	178,000
Tetramer propylene (tech. grade)	-	-	-	-	-	-	500	8	62,500
Ethyl chloride (tech. grade)	-	-	-	-	-	-	400	2.5	160,000
Ethylene dichloride (tech. grade)	-	-	-	-	-	-	250	5	50,000

SINCAT'S SALEABLE PRODUCTION [1]

Product	Tons Per Year	Price Per Ton	Million Lire
Complex fertilizers:	350,000		
8-12-8 formula	100,000	31,000	3,100
10-15-10 formula	150,000	38,000	5,700
10-20-10 formula	50,000	44,000	2,200
6-26-8 formula	50,000	41,000	2,050
			13,050
Ammonium sulphate	85,000	32,000	2,720
Caustic potash	10,000	120,000	1,200
Potassium sulphate	10,000	38,000	380
Nitric acid	24,300	24,000	585
Caustic soda	7,000	50,000	350
Ethylene	23,300	115,000	2,680
Ethyl chloride	2,500	150,000	375
Tetramer	8,000	80,000	640
Perchloroethylene	6,000	120,000	720
Ethylene dichloride	800	60,000	48
Propylene (fract. C_3 LPG)	10,000	35,000	350
Fraction C_4 (LPG)	13,400	20,000	268
Gasoline	47,900	20,000	958
Fuel Oil	9,300	9,500	88
Other Sales			200
	Total Sales		24,612

1/ Prices are f.o.b. plant including sales and bagging costs; taxes excluded except for I.G.E. on ammonium sulphate and manufacturing tax on fuel oil. Ethylene is at current market price; other products 20% or more below present market prices.

S I N C A T

FINANCIAL FORECASTS
(Million Lire)

Year ended December 31	Construction 1959	1960	1961	Operation 1962	1963	1964	1965
I. Earnings Estimate							
Operating Costs	4,899	6,964	10,017	13,310	17,060	17,060	17,060
Interest:							
IBRD - 1st loan	196	179	161	143	123	102	80
2nd loan	-	520	491	453	412	369	324
3rd loan	-	-	215	280	266	239	209
EIB	-	-	215	280	266	239	209
Other (IRFIS)	-	-	62	80	76	68	60
Short term	120	136	136	80	-	-	-
Depreciation:							
1st stage	500	570	600	600	600	600	600
2nd stage	-	1,180	1,200	1,200	1,200	1,200	1,200
3rd stage	-	-	600	1,400	1,800	1,800	1,800
Taxes	15	65	125	150	160	160	160
Total Costs	5,730	9,614	13,822	17,976	21,963	21,837	21,702
Total Net Sales	5,730	9,764	15,330	19,956	24,612	24,612	24,612
Non-Operating Income	215	305	305	305	305	305	305
Total Income	5,945	10,069	15,635	20,261	24,917	24,917	24,917
Net Income	215	455	1,813	2,285	2,954	3,080	3,215
Net Income as % of Share Capital and Shareholders' Advances Outstanding	1.1	1.9	7.7	9.8	12.6	13.2	13.8

	1955/58	1959	1960	1961	Total Construction Period	1962	1963	1964	1965
II. Sources and Application of Funds									
Net Income before Interest	-	531	1,290	3,093	4,914	3,601	4,097	4,097	4,097
Depreciation accruals	-	500	1,750	2,400	4,650	3,200	3,600	3,600	3,600
Share Capital	5,000	-	5,000	-	10,000	-	-	-	-
Shareholders' Advances	11,862	2,277	-	-	14,139	-	-	-	-
Loans: 1/									
IBRD - 1st	3,600	-	-	-	3,600	-	-	-	-
- 2nd	2,490	5,510	-	-	8,000	-	-	-	-
- 3rd	-	1,837	2,188	350	4,375	-	-	-	-
EIB	-	1,837	2,188	350	4,375	-	-	-	-
IRFIS	-	526	624	100	1,250	-	-	-	-
Short term	3,358	-	200	-	3,558	-	-	-	-
Associated companies	11,097	-	-	-	11,097	-	-	-	-
Debentures 2/	2,000	3,000	-	-	5,000	-	-	-	-
Decrease "Other Assets"	-	3,625	1,300	1,200	6,125	-	-	-	-
Total Sources	39,407	19,643	14,540	7,493	81,083	6,801	7,697	7,697	7,697
Plant and Equipment: 3/									
1st stage	8,020	-	-	-	8,020	-	-	-	-
2nd stage	14,440	2,160	-	-	16,600	-	-	-	-
3rd stage	654	7,746	10,000	1,600	20,000	-	-	-	-
Total Fixed Assets	23,114	9,906	10,000	1,600	44,620				
Current Assets	3,060	440	500	1,500	5,500	500	-	-	-
Decrease Short-Term Loans	-	1,858	-	-	1,858	700	1,000	-	-
Due Associated Companies	-	6,625	1,300	1,200	9,125	-	-	-	-
Other Assets 4/	13,097	-	-	-	13,097	-	-	-	-
Interest:									
IBRD - 1st	-	196	179	161	536	143	123	102	80
- 2nd	-	-	520	491	1,011	453	412	369	324
- 3rd	-	-	-	215	215	280	266	239	209
EIB	-	-	-	215	215	280	266	239	209
IRFIS	-	-	-	62	62	80	76	68	60
Short term	-	120	136	136	392	80	-	-	-
Debentures	-	215	305	305	825	305	305	305	305
Amortization:									
IBRD - 1st	136	283	299	317	1,035	336	355	377	398
- 2nd	-	-	-	597	597	635	676	718	764
- 3rd	-	-	-	-	-	-	437	464	494
EIB	-	-	-	-	-	-	437	464	494
IRFIS	-	-	-	-	-	-	125	132	141
Decrease Shareholders' Advances	-	-	739	-	739	-	-	-	-
"Additional Assets"	-	-	562	694	1,256	3,009	3,219	4,220	4,219
Total Applications	39,407	19,643	14,540	7,493	81,083	6,801	7,697	7,697	7,697

1/ IBRD first loan at 5 3/4% for 13 years, including 3-year grace period; second loan at 6 1/4%, same term and grace period; third loan assuming 6 1/4% for 12 years, including 4-year grace period, same rate and term for EIB and IRFIS loans.
2/ Debentures, held by shareholders: first series Lit. 500 million 7% 25 years, issued 6/1/57, second series Lit. 1.5 billion 6% 25 years, issued 5/1/58, third series Lit. 3 billion scheduled for issue in 1959, expected rate 6%, term 25 years. No repayments are scheduled until after the long-term bank loans have been repaid.
3/ Including Interest and Taxes Capitalized.
4/ Organization Expenses, Construction Material Inventories, Prepayments, Land, etc.

S I N C A T

FINANCIAL FORECASTS
(Million Lire)

	Construction					Operation			
	1957	1958	1959	1960	1961	1962	1963	1964	1965
III. Balance Sheets (as at December 31)									
Fixed Assets	12,604	23,114	33,020	43,020	44,620	44,620	44,620	44,620	44,620
Less Depreciation	-	-	500	2,250	4,650	7,850	11,450	15,050	18,650
Net Fixed Assets	12,604	23,114	32,520	40,770	39,970	36,770	33,170	29,570	25,970
Other Assets	2,364	13,097	9,472	8,172	6,972	6,972	6,972	6,972	6,972
Current Assets	2,495	3,060	3,500	4,000	5,500	6,000	6,000	6,000	6,000
"Additional Assets"	-	-	-	562	1,256	4,265	7,484	11,704	15,923
Total Assets	17,463	39,271	45,492	53,504	53,698	54,007	53,626	54,246	54,865
Current Liabilities	2,996	3,641	1,799	2,614	2,671	3,030	2,155	2,291	2,433
Share Capital	2,000	5,000	5,000	10,000	10,000	10,000	10,000	10,000	10,000
Shareholders' Advances	8,702	11,862	14,139	13,400	13,400	13,400	13,400	13,400	13,400
Surplus	-	-	-	150	1,658	3,638	6,287	9,062	11,972
Loans:									
IBRD - 1st	3,129	3,181	2,882	2,565	2,229	1,874	1,497	1,099	678
- 2nd	-	2,490	8,000	7,403	6,768	6,092	5,374	4,610	3,798
- 3rd	-	-	1,837	4,025	4,375	3,938	3,474	2,980	2,455
EIB	-	-	1,837	4,025	4,375	3,928	3,474	2,980	2,455
IRFIS	-	-	526	1,150	1,250	1,125	993	852	702
Associated Companies	136	11,097	4,472	3,172	1,972	1,972	1,972	1,972	1,972
Debentures	500	2,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Total Liabilities and Equity	17,463	39,271	45,492	53,504	53,698	54,007	53,626	54,246	54,865

C E L E N E

FINANCIAL FORECASTS
(Million Lire)

Year ended December 31	Construction 1959	Construction 1960	Construction 1961	Total Construction Period	Operation 1962	Operation 1963	Operation 1964	Operation 1965
I. Earnings Estimate								
Production (% of ultimate capacity)			40		70	100	100	100
Operating Costs			4,310		7,298	9,747	9,747	9,747
Interest IBRD Loan			78		156	152	137	120
" EIB Loan			78		156	152	137	120
" Other Loans			35		70	70	70	70
Depreciation			184		515	813	813	813
Taxes			15		30	85	85	85
Total Costs			4,700		8,225	11,019	10,989	10,955
Net Sales			4,700		8,225	11,750	11,750	11,750
Net Income			-		-	731	761	795
Net Income as % of Share Capital and Shareholders' Advances			-		-	9.1	9.6	10.0
II. Sources and Applications of Funds								
Net income before Interest	-	-	191	191	382	1,105	1,105	1,105
Depreciation	-	-	184	184	515	813	813	813
Share Capital	2,000	1,000	1,000	4,000	-	-	-	-
Shareholders' Advances	1,000	2,300	700	4,000	-	-	-	-
IBRD	1,000	1,250	250	2,500	-	-	-	-
EIB	1,000	1,250	250	2,500	-	-	-	-
Other Loans 1/	200	300	500	1,000	-	-	-	-
Total Sources	5,200	6,100	3,075	14,375	897	1,918	1,918	1,918
Fixed Assets 2/	4,700	5,600	1,700	12,000	-	-	-	-
Current Assets	500	500	1,000	2,000	600	-	-	100
Interest:								
IBRD	-	-	78	78	156	152	137	120
EIB	-	-	78	78	156	152	137	120
Other	-	-	35	35	70	70	70	70
Amortization:								
IBRD	-	-	-	-	-	249	265	282
EIB	-	-	-	-	-	249	265	282
Other	-	-	-	-	-	-	-	-
"Additional Assets"	-	-	184	184	(85)	1,046	1,044	944
Total Applications	5,200	6,100	3,075	14,375	897	1,918	1,918	1,918

1/ May be Debentures.
2/ Including Interest and Taxes Capitalized.

C E L E N E

FINANCIAL FORECASTS
(Million Lire)

	Construction			Operation			
	1959	1960	1961	1962	1963	1964	1965
III. Balance Sheets (as at December 31)							
Fixed Assets	4,700	10,300	12,000	12,000	12,000	12,000	12,000
Less Depreciation	-	-	184	699	1,512	2,325	3,138
Net Fixed Assets	4,700	10,300	11,816	11,301	10,488	9,675	8,862
Current Assets	500	1,000	2,000	2,600	2,600	2,600	2,700
"Additional Assets"	-	-	184	99	1,145	2,189	3,133
Total Assets	5,200	11,300	14,000	14,000	14,233	14,464	14,695
Current Liabilities	-	-	-	498	530	564	600
Share Capital	2,000	3,000	4,000	4,000	4,000	4,000	4,000
Shareholders' Advances	1,000	3,300	4,000	4,000	4,000	4,000	4,000
Surplus	-	-	-	-	731	1,492	2,287
Loans:							
IBRD	1,000	2,250	2,500	2,251	1,986	1,704	1,404
EIB	1,000	2,250	2,500	2,251	1,986	1,704	1,404
Other	200	500	1,000	1,000	1,000	1,000	1,000
Total Liabilities and Equity	5,200	11,300	14,000	14,000	14,233	14,464	14,695

ANNEX A-6

ESTIMATED SALEABLE PRODUCTION OF CELENE

	Quantity	Price[1/] Lire/Kg.	Million Lire
Ethylene Oxide	1,500	300	450
Ethylene Glycols	6,000	225	1,350
Ethylene Glycol Ethers	7,000	300	2,100
Diethylene Glycol Ethers	1,000	300	300
Polyethylene Glycols	1,500	500	750
Polyethylene Glycol Ethers	1,500	500	750
Other derivative products of Ethylene Oxide	2,500	380	950
Ethanolamines (Mono, Di, Tri)	2,500	340	850
	23,500		
Polyethylene -			
Film grades	3,000	450	1,350
Molding grades	5,000	420	2,100
Extrusion, blow-molding grades	2,000	400	800
Annual Sales, total	10,000		11,750

1/ Polyethylene average price is 15% below present prices, other products are 20% below.

ANNEX B-1

SME Group

Operating Statistics

Year	1952	1953	1954	1955	1956	1957	1958
Peak Load (MW)	467	545	625	625	760	701	696
Generation (Mill. kwh)							
Hydro	1,665	1,985	2,191	2,279	2,322	2,172	2,470
Thermal	139	30	152	200	509	797	548
Total	1,804	2,015	2,343	2,479	2,831	2,969	3,018
Purchases (mill. kwh)	500	512	458	528	665	708	692
Total Energy (mill. kwh)	2,304	2,527	2,801	3,007	3,496	3,677	3,710
Losses and own uses (mill. kwh)	459	475	471	552	618	718	692
In %	20.1	18.8	16.9	18.2	17.6	19.5	18.5
Total Sales (mill. kwh)	1,845	2,052	2,330	2,455	2,878	2,959	3,018
Load Factor	0.56	0.53	0.51	0.55	0.53	0.59	0.60

ANNEX B-2

SME

Power Sales 1952-58 and Forecasts 1959-64

(Million kwh)

	1952	1953	1954	1955	1956	1957	1958	Average Annual Increase %
Categories of Consumers								
Public Light	52	56	61	67	75	83	88	9.0
Private Light	199	217	243	264	282	321	327	9.0
Domestic	131	161	196	217	268	289	381	18.0
Industry								
Less than 30 kw	172	194	227	254	283	333	360	13.0
Above 30 kw	533	652	743	780	833	875	937	10.0
Electro-chemical	449	484	491	485	510	510	436	--
Traction	210	196	206	214	219	242	199	--
Other Companies	99	92	163	174	408	306	290	18.0
Total Sales	1845	2052	2330	2455	2878	2959	3018	9.0

	1959	1960	1961	1962	1963	1964	Average Annual Increase 1958/64 %
Public Light	96	106	116	124	134	143	8.5
Private Light	348	374	400	426	456	483	7.5
Domestic	430	486	541	595	649	701	11.0
Industry							
Less than 30 kw	389	421	464	515	573	642	10.5
Above 30 kw	994	1056	1136	1238	1360	1496	8.5
Electro-chemical	459	470	480	490	505	524	3.5
Traction	204	216	220	223	229	236	3.5
Other Companies	189	257	350	539	907	1041	20.0
Totals	3109	3386	3707	4150	4813	5266	9.0
Losses and Own Consumption	702	767	851	931	1035	1117	
Total Energy Required	3811	4153	4558	5081	5848	6383	
Peak Load (MW)	790	865	950	1050	1210	1320	

SME GROUP
CONSTRUCTION PROGRAM

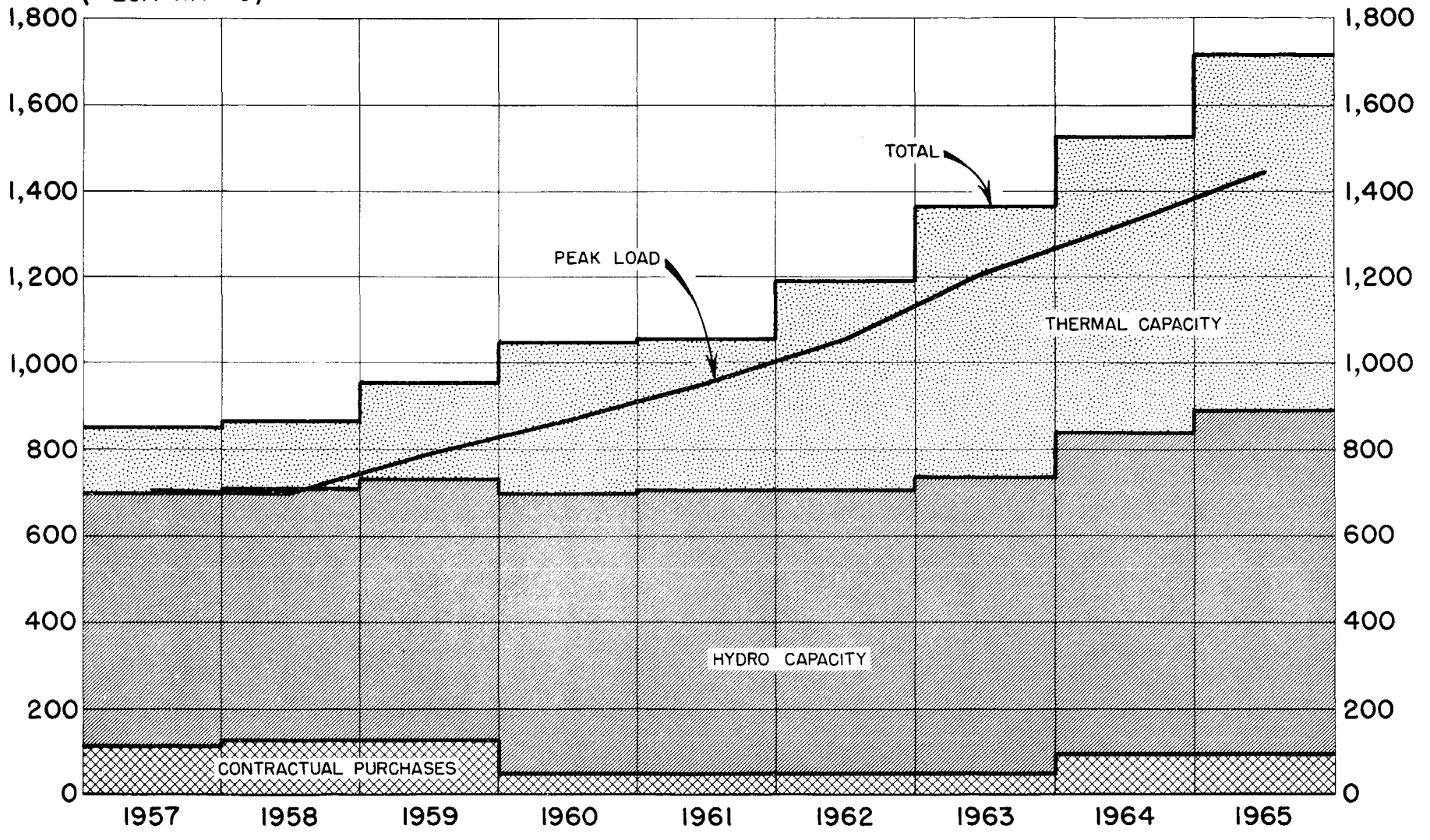
(Million Lire)

		Expenditures before Dec. 31, 1958	1959	1960	1961	1962	1963	1964	1965 and after	Total
I. Projects financed by IBRD Loans										
Bussento hydro	52 MW	4,370	1,200	980	-	-	-	-	-	6,550
Bari thermal	137 MW	11,306	3,400	1,794	-	-	-	-	-	16,500
Levante thermal	300 MW	4,445	5,700	6,750	5,500	2,105	-	-	-	24,500
Agri hydro	38 MW	176	1,000	2,500	3,000	2,000	1,004	-	-	9,680
II. Project considered for Loan										
Mercure thermal	210 MW	499	1,300	4,200	5,000	5,000	5,300	3,701	-	25,000
III. Other Projects										
Neto-Aria-Macina hydro	5 MW	60	500	600	340	-	-	-	-	1,500
Sava-Lete hydro	100 MW	22	500	2,750	4,500	3,250	1,500	478	-	13,000
Tammaro hydro	50 MW					700	1,000	2,700	4,600	9,000
New thermal	300 MW					4,200	5,500	6,500	8,800	25,000
IV. Transmission and Substation			2,750	2,500	2,000	2,000	2,000	2,000	2,000	15,250
V. Distribution			6,750	6,750	6,750	6,750	6,750	6,750	6,750	47,250
VI. Other works			1,200	775	1,000	1,000	1,000	1,000	1,000	6,975
Totals	1,192 MW	20,878	24,300	29,599	28,090	27,005	24,054	23,129	23,150	200,205

ANNEX B-3

ITALY: SME GROUP
EFFECTIVE GENERATING CAPACITY AND PEAK LOAD

(MEGA WATTS)



IBRD - Economic Staff

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ANNEX B-4

SME

Mercure Thermal Plant

Construction Cost Estimate

	(Million Lire)	
Coal Mining		
Explorations, studies, engineering	600	
Land	300	
Roads, buildings, preliminary works	600	
Mining machinery	2,500	
Sub-total		4,000
Power Plant		
Land	200	
Preliminary works	125	
Cooling water intake	525	
Cooling towers	600	
Buildings and other civil works	1,750	
Turbogenerators with auxiliaries	5,200	
Boilers with auxiliaries	3,600	
Coal crushers, conveyors and silos	2,250	
Transformers	750	
Switch gear and control equipment	1,000	
Miscellaneous	500	
Sub-total		16,500
Supervision and Overhead (2%)		500
Contingencies (10%)		2,100
Interest during construction		1,900
Total		25,000

SME

Mercure Thermal Project

Comparative Cost of Production

Mercure thermal plant

Capital cost:	Lire 21 billion
Annual Operation:	" 700 million

Cost of operations:	
Operation and maintenance	Lire 840 million
Depreciation (25-year life)	" 840 "
Return on investment (6.5%)	" 1260 "
Total	Lire 2940 million

Fixed costs per kwh	Lire 4.20

Transmission costs	
Capital cost of transmission line (140 Km)	Lire 1.12 billion
Annual costs:	Lire 128.8 million
Losses (3% at Lire 8/Kwh)	Lire 168.0 "
Total	Lire 296.8 million

While this transmission line initially is required in connection with the Mercure project, it would in any case be required later to supply power to meet the increased demand in the areas of Lucania and Campania. It is therefore reasonable to allocate only 50% of the estimated annual costs to the Mercure project. The transmission costs would therefore amount to Lire 0.20/kwh. Cost of power from Mercure, excluding fuel, wouldamount to Lire 4.40/kwh (7 mills/kwh).

Brown Coal Mining

The average heat value of the brown coal deposits at Mercure has been established at 1,800 Kcal/Kg. The heat rate of the Mercure plant has been assumed at 2,600 Kcal/kwh. The annual requirement of coal will therefore amount to 1.05 million tons.

The mining plan prepared by the consultants assumes that during the first four years of operation this quantity of coal can be obtained by open cast mining (stripping). Starting with the fifth year the amount of the overburden, which has to be removed, makes it necessary to assume that 2/3 of the coal would be obtained by stripping and 1/3 by underground mining.

The average cost of production of coal has been estimated at Lire 1,740 per ton. This estimate is based on the following assumptions:

Capital Costs:

Open cast mines	Lire 4.0 billion
Underground mines	" 2.1 "

Labor:

Wages 50% higher than those prevailing at present.

Operation and Maintenance:

Includes ample provisions for spare parts, repair and replacements to insure that all installations and equipment are in full operating condition until the coal deposits have been fully exploited. Reasonable allowances have been made for overhead, insurance, power and fuel.

Depreciation:

Calculated on a straight line basis, assuming an average life of 17.5 years for the open cast mines and 11 years for the underground mines.

Return on investment:

A rate of 6.5% has been assumed.

The resultant fuel costs for the Mercure plant will amount to Lire 2.50/kwh and the total power costs to Lire 6.90/kwh (11 mills/kwh).

Equivalent Oil-Fired Thermal Plant

Capacity: 210 MW Annual Production: 700 mill. kwh

Capital Cost: Lire 18.0 billion

Annual Costs:

Operations and Maintenance:	Lire 720 million
Depreciation (25 years Life)	" 720 "
Return on investment (6.5%)	" 1140
Total	Lire 2580 million

Fixed Costs per kwh: Lire 3.80

Fuel Costs

Cost of oil: Lire 15,400/ton including fuel tax
Lire 13,600/ton excluding fuel tax

Heat rate : 2,500 Kcal/kwh

Fuel costs : Lire 3.80/kwh including fuel tax
Lire 3.45/kwh excluding fuel tax

Total cost of power: Lire 7.40/kwh including fuel tax
Lire 7.05/kwh excluding fuel tax

Return of Additional Investment for Mercure Plant

Additional cost : Lire 4.12 billion

Savings annual costs: Lire 522 million including fuel tax
Lire 260 million excluding fuel tax

Return: 12.5% including fuel tax
6.5% excluding fuel tax

Contributions to power plants built in Italy after 1953

	Thermal Plants	Hydroelectric Plants	
		Run-of-River	Reservoir
From the Equalization Fund*	Lit 2.5 per Kwh, up to 2,000 hours of annual plant operation	Lit 3.00 per Kwh for available power from average annual river flow.	Lit 4.00 per Kwh actually generated
	Lit.0.5 per Kwh for energy generated in excess of 2,000 hours of annual plant operation		
From the Italian Government** (Cassa Area Only)	Lit 1,500 per year per Kw installed (minimum capacity 5,000 Kw)	Lit 4,500 per year per Kw installed (minimum capacity 100 Kw)	

*Law of January 10, 1957.
**Law of May 5, 1957. This contribution will cease in 1971.

ANNEX B-7

Societa Meridionale di Elettricite (SME)

Condensed Balance Sheets
(in millions of Lire)

ASSETS	3/31/1956	3/31/1957	3/31/1958	12/31/1958
Fixed Assets	158,883	165,074	170,711	173,368
- Depreciation Reserve	43,853	48,703	53,703	57,478
Net fixed assets	115,030	116,371	117,008	115,890
Work in Progress	4,800	3,295	4,464	10,442
Current Assets:				
Cash	286	999	567	618
Others	15,926	18,387	23,622	21,791
Investments	17,849	23,655	24,582	24,560
Miscellaneous	1,696	1,930	2,137	1,663
Total Assets	155,587	164,637	172,380	174,964
LIABILITIES				
Long and medium-term debt	33,461	33,988	33,599	35,935
Floating Debt	13,661	6,619	10,340	10,729
Total Borrowings	47,122	40,607	43,939	46,664
Current Liabilities *	14,732	20,364	24,493	20,372
Share Capital	56,550	71,223	71,223	74,983
Revaluation Account	35,007	29,867	29,867	29,867
Reserves	2,176	2,576	2,858	3,078
Total Equity	93,733	103,666	103,948	107,928
Total Liabilities	155,587	164,637	172,380	174,964
Debt/Equity Ratio	33/67	28/72	29/71	30/70

* Including dividends to be paid in the following fiscal year.

ANNEX B-8

ANNEX B-9

Societa Meridionale di Elettricite (SME)

Condensed Income Statements

	Year ending -	3/31/1955	3/31/1956	3/31/1957	3/31/1958	9 months to 12/31/1958
1.	Sales of energy (millions of Kwh)	2,344	2,627	2,871	2,562	1,799
2.	Average revenue per Kwh (Lire)	7.2	7.03	7.80	8.95	9.33
		Millions of Lire				
3.	Revenues from sales of electricity	16,886	18,472	22,404	22,936	16,785
4.	Subsidies and payments by equalization fund	1,790	1,966	2,568	2,015	1,005
5.	Other income (net)	3,012	3,771	3,829	4,265	3,010
6.	Total Revenues	21,688	24,209	28,801	29,216	20,800
7.	Operating costs	8,761	10,520	13,894	13,791	8,771
8.	Depreciation	4,000	4,300	4,850	5,000	3,775
9.	Taxes	1,300	1,318	1,486	1,591	1,372
10.	Gross Income	7,627	8,071	8,571	8,834	6,882
11.	Interests (other than capitalized)	3,463	3,580	3,409	3,193	2,492
12.	Net Profit	4,164	4,491	5,162	5,641	4,390
	Dividends and management bonus	3,945	4,256	4,903	5,358	4,170
	Retained earnings for the year	219	235	259	282	220
	Total reserves at beginning of year	1,722	1,941	2,176	2,576	2,858
	Total reserves at end of year	1,941	2,176	2,576*	2,858	3,078

* of which Lire 141 million transferred from revaluation account.

SME GROUP

Condensed Balance Sheets
(Millions of Lire)

December 31 -	ACTUAL 1955	1956	1957	1958 *	ESTIMATED 1959	1960	1961	1962	1963	1964
ASSETS										
Fixed assets in operation	223,096	239,901	254,769	277,934	302,234	331,833	359,923	386,928	410,982	434,111
less: Depreciation reserve	77,832	85,292	93,762	102,202	111,702	122,302	133,802	146,002	159,302	173,502
Net fixed assets in operation	145,264	154,609	161,007	175,732	190,532	209,531	226,121	240,926	251,680	260,609
Work in Progress	16,122	9,943	11,683	17,730	17,730	17,730	17,730	17,730	17,730	17,730
Current Assets	28,365	35,033	37,512	29,817	29,891	29,896	29,928	30,017	30,089	30,245
Participations in companies outside the Group	8,365	10,268	10,495	12,065	14,465	15,965	18,665	22,165	24,265	26,815
Miscellaneous Assets	1,801	1,906	2,294	1,818	1,818	1,818	1,818	1,818	1,818	1,818
Total Assets	199,917	211,759	222,991	237,162	254,436	274,940	294,262	312,656	325,582	337,217
LIABILITIES										
Long and Medium-term debt										
Cassa -(IBRD Loans No. 117 and 189)	5,071	10,743	14,364	18,397	23,066	28,734	32,719	32,863	32,040	30,544
Proposed Cassa (IBRD-EIB) Loan	-	-	-	-	1,080	3,600	6,600	9,600	11,250	10,770
Other long and medium-term debt	29,768	28,434	26,982	30,161	28,519	33,266	40,557	44,758	49,246	58,062
Floating debt to commercial banks	16,376	11,485	12,112	10,384	14,684	13,684	17,884	19,084	16,384	19,884
Total Debt	51,215	50,662	53,458	58,942	67,349	79,284	97,760	106,305	108,920	119,260
Current, accrued and miscellaneous liabilities **	29,904	38,314	41,372	45,517	45,517	45,517	45,517	45,517	45,517	45,517
Share capital (paid-in)	59,666	65,726	75,735	79,607	87,701	95,494	95,494	104,494	113,952	114,384
Revaluation Account	56,042	53,494	48,354	48,354	48,354	48,354	48,354	48,354	48,354	48,354
Reserves	3,090	3,563	4,072	3,742	5,515	6,291	7,137	7,986	8,839	9,702
Total Equity	118,798	122,783	128,161	132,703	141,570	150,139	150,985	160,834	171,145	172,440
Total Liabilities	199,917	211,759	222,991	237,162	254,436	274,940	294,262	312,656	325,582	337,217
Debt/Equity Ratio	30/70	29/71	29/71	31/69	32/68	34/66	39/61	40/60	39/61	40/60

*Provisional figures.
**Including dividends to be paid in the following fiscal year.

SME GROUP

Funded debt as at December 31, 1958

	Nominal Interest Rate	Principal Outstanding (Millions of Lire)						Total	%
		SME	Pugliese	Campania	Calabria	Lucana	Sebi		
1. Cassa loans from IBRD funds									
Loan 117-IT, due 1958-1975	5.2%	5,422	7,228					12,650	
Loan 150-IT, due 1961-1976	5.65%	2,530						2,530	
Loan 189-IT, due 1962-1977	5.80%	3,217						3,217	
Total IBRD loans		11,169	7,228					18,397	37.9%
2. Mortgage loans from ICIPU									
3 30-year loans, due 1944-1975	6.50%	861						861	
2 20-year loans, due 1946-1966	6.15%	545						545	
5 20-year loans, due 1948-1970	6.50%	5,567						5,567	
6 20-year loans, due 1952-1974	6.75%	10,739						10,739	
5 20-year loans, due 1958-1978	6.875%		494	1,975	1,778	691		4,938	
Total ICIPU loans		17,712	494	1,975	1,778	691		22,650	46.6%
3. Bond Issues									
1 bond issue, due 1930-1960	6%	2						2	
1 bond issue, due 1934-1959	5%	7						7	
1 bond issue, due 1949-1974	6%	3,221						3,221	
Total Bond Issues		3,230						3,230	6.7%
4. ERP Counterpart loans (channeled through I.M.I.)									
1 15-year loan, due 1953-1967	5.5%	1,281						1,281	
1 15-year loan, due 1953-1968	5.5%	2,468						2,468	
1 15-year loan, due 1949-1964	6.5%			340				340	
Total ERP-I.M.I. Loans		3,749		340				4,089	8.4%
5. Miscellaneous									
2 15-year loans from the Housing Fund	4.75%	75		75				150	
3 50-year loans from the Agricultural Fund	4.75%						42	42	
Total Miscellaneous		75			1,778	691	42	192	.4%
Total Funded Debt		35,935	7,722	2,390	1,778	691	42	48,558	100.0%

SME GROUP

Condensed Income Statements

Calendar year -	ACTUAL 1955	1956	1957	1958	ESTIMATED 1959	1960	1961	1962	1963	1964
Total availability (millions of Kwh)	2,994	3,496	3,609	3,670	3,811	4,153	4,558	5,081	5,848	6,383
Losses and internal use (" " ")	539	618	650	652	702	767	851	931	1,035	1,117
Sales of power (" " ")	2,455	2,878	2,959	3,018	3,109	3,386	3,707	4,150	4,813	5,266
Average revenue for Kwh sold (Lire)	12.4	12.6	14.0	14.5	14.8	14.7	14.5	14.2	13.5	13.5
	Millions of Lire				Millions of Lire					
Revenues from sales of energy	30,487	36,342	41,393	43,665	46,030	49,877	53,881	59,035	65,195	71,115
Contributions from equalization fund, etc.	2,303	2,525	2,141	2,366	3,525	4,388	5,316	5,902	7,185	8,022
Other income, net	4,379	4,666	4,831	5,293	5,400	5,600	5,700	6,000	6,200	6,400
Total Revenues	37,169	43,533	48,365	51,324	54,955	59,865	64,897	70,937	78,580	85,537
Operating Costs	19,264	24,271	28,291	29,537	30,872	33,084	36,051	39,888	44,727	49,774
Depreciation	6,880	7,460	7,965	8,440	9,500	10,600	11,500	12,200	13,300	14,200
Taxes	2,737	2,612	2,666	2,967	3,300	3,700	4,100	4,400	4,700	5,100
Gross Income	8,288	9,190	9,443	10,380	11,283	12,481	13,246	14,449	15,853	16,463
Interest charges (other than capitalized)	3,473	3,634	3,370	4,080	4,200	4,600	5,200	5,700	6,200	6,500
Net Profit	4,815	5,556	6,073	6,300	7,083	7,881	8,046	8,749	9,653	9,963
Dividends and management loans	4,517	5,221	5,706	5,630	6,310	7,105	7,200	7,900	8,800	9,100
Retained earnings	298	335	367	671	773	776	846	849	853	863
Reserves at beginning of the year	2,792	3,090	3,563	4,072	4,742	5,515	6,291	7,137	7,986	8,839
Reserves at end of the year	3,090	3,563*	4,072*	4,742	5,515	6,291	7,137	7,986	8,839	9,702
Interest Coverage	2.4	2.5	2.8	2.5	2.7	2.7	2.6	2.5	2.5	2.5
Gross return on average net investment in operation	6.0%	6.2%	6.1%	6.1%	6.2%	6.2%	6.1%	6.1%	6.4%	6.4%
Net return on average paid-in share capital	8.4%	8.7%	8.5%	8.2%	8.4%	8.5%	8.5%	8.5%	8.7%	8.7%

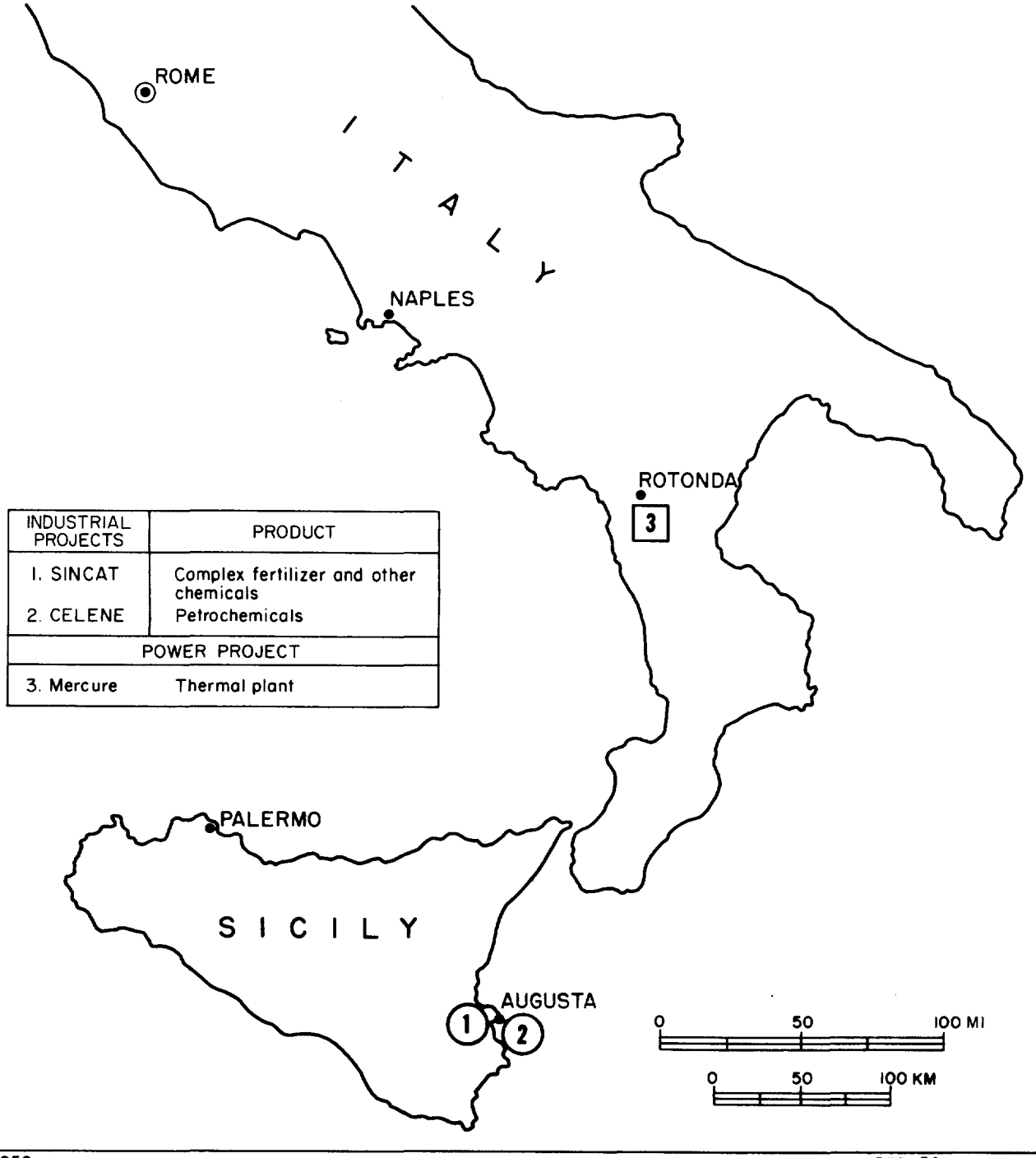
*Including amounts transferred from the revaluation account.

SME GROUP

Forecast of Sources and Application of Funds
(millions of Lire)

	1959	1960	1961	1962	1963	1964
Sources of Funds						
Gross income, as per income statements	11,283	12,481	13,246	14,469	15,853	16,463
Depreciation	9,500	10,600	11,500	12,200	13,300	14,200
Net receipts from operations	20,783	23,081	24,746	26,649	29,153	30,663
Share Capital contributions	8,094	7,793	-	9,000	9,458	432
Long and medium-term borrowings						
Proposed Cassa (IBRD-EIB) Loan	1,080	2,520	3,000	3,000	1,650	-
Cassa-IBRD loans (No. 117 & 189)	5,169	6,194	4,708	1,200	594	-
Other long and medium-term borrowings	-	6,470	9,240	6,470	7,020	11,530
Total long and medium-term loans	6,249	15,184	16,948	10,670	9,264	11,530
Short-term Credits	4,300	-	4,200	1,200	-	3,500
Total Receipts (a)	39,426	46,058	45,894	47,519	47,875	46,125
Application of Funds						
Construction expenditures, including capitalized interest						
Mercure Project	1,300	4,200	5,000	5,000	5,300	5,701
Projects financed by previous IBRD loans	11,300	12,024	8,500	4,105	1,004	-
Other construction	11,700	13,375	14,590	17,900	17,750	17,428
Total construction expenditures	24,300	29,599	28,090	27,005	24,054	23,129
Debt Service						
Interest charges, (other than capitalized)	4,200	4,600	5,200	5,700	6,200	6,500
Redemption of bonds	126	133	141	149	158	168
Repayment of proposed Cassa IBRD-EIB loan	-	-	-	-	-	520
Repayment of Cassa-IBRD loans 117 and 189	500	526	723	1,056	1,417	1,496
Repayment of other loans	1,516	1,590	1,808	2,120	2,374	2,506
Total Debt Service	6,342	6,849	7,872	9,025	10,149	11,190
Investments in companies outside the group	2,400	1,500	2,700	3,500	2,100	2,550
Dividends and management bonus	6,310	7,105	7,200	7,900	8,800	9,100
Repayment of short-term credits	-	1,000	-	-	2,700	-
Total Expenditures (b)	39,352	46,053	45,862	47,430	47,803	45,969
Cash accrual for the year (a-b)	74	5	32	89	72	156
Debt service coverage	3.2	3.3	3.2	3.3	2.9	2.7

LOCATION OF INDUSTRIAL & POWER PROJECTS IN SOUTHERN ITALY



INDUSTRIAL PROJECTS	PRODUCT
1. SINCAT	Complex fertilizer and other chemicals
2. CELENE	Petrochemicals
POWER PROJECT	
3. Mercure	Thermal plant

MARCH 1959

IBRD-561