Policy, Planning, and Research

WORKING PAPERS

Energy Development

Industry and Energy Department
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Recent World Bank Activities in Energy

Industry and Energy Department

About one-fifth of total Bank lending goes to the energy sector — and two-thirds of that supports electric power. Annual Bank energy lending has tripled in the last decade. This paper provides background information on that energy lending

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Energy Development

Annual Bank energy lending (including credits from the International Development Association) has tripled, from US$1 billion in fiscal 1977 to about US$3.7 billion in fiscal 1987, but it decreased somewhat in fiscal 1988. Its energy lending over the past 40 years has totalled over US$34 billion.

About one-fifth of total Bank lending is directed to the energy sector. More than two-thirds of the Bank's energy lending is for electric power, which amounts to about US$2.0 billion a year — and over US$19 billion in the past nine years.

In other energy subsectors, the Bank is emphasizing assistance for energy supplies for the domestic market that could not be financed by export earnings and serving as a catalyst for the development of these resources.

This paper presents basic background information on Bank lending in energy, as ready reference for answering queries from companies, governments, and other entities outside the Bank. The paper describes the Bank's role in energy lending — detailing in the annexes, the Bank's lending for gas, oil, electric power projects and its recent energy sector loans. It describes projects by country, giving loan amounts and fiscal years of Board approval.

This paper, a product of the Energy Development Division, Industry and Energy Department, has also appeared as an Industry and Energy Department Working Paper. Copies are available free from the World Bank, 1818 H Street NW, Washington DC 20433. Please contact Mary Fernandez, IENED Publications Manager, room S4-037, extension 33637.

ABSTRACT

The International Bank for Reconstruction and Development (IBRD), the International Development Association (IDA) and the International Finance Corporation (IFC) together comprise the World Bank Group. They share the common objective of raising the standards of living, promoting substantial economic development, and alleviating poverty in the developing countries by channeling financial resources to them and by providing policy and technical advice. Energy serves as one of the foremost catalysts for economic development and expenditures for energy are an important part of developing countries budgets. The Bank therefore channels significant resources to the energy sector.

In order to increase understanding of the Bank's involvement in energy, this paper describes the role of the Bank in energy and then summarizes its recent lending program in energy.

This Energy Series Paper No. 7 was published previously in June 1988 but it has been revised to include FY88 energy lending. The intent of this paper is to serve as a ready reference for Bank staff and to provide background information in answering queries from companies, governments and other entities outside of the Bank.

CONTENTS

ANNEXES

I. INTRODUCTION

Energy serves as one of the foremost catalysts for economic development and energy-related investments comprise a significant portion in the portfolios of even the poorest developing countries. In the light of this phenomenon, the efforts of development institutions as intermediaries in the financing of energy projects cannot be understated. This paper explains the role of the World Bank Group in energy and, specifically, the projects it has undertaken in the oil, gas, and electric power subsectors. The project listings are based on compilation by the Energy Development Division1/. The Bank has undertaken coal projects but they have not been included for purposes of this report.

The World Bank is the single most important official source of external capital for energy development in the developing countries. Bank annual energy lending (including credits from the International Development Association) had tripled from $1 billion in fiscal 1977 to over $3 billion in FY87 although energy lending was down somewhat in FY88. The Bank's energy lending has totalled over $34 billion over the past 40 years. In Bank's approach to project financing, it has emphasized the review of sector objectives, priorities and investment options.

The first part of the paper describes the role of the World Bank in energy and, in doing so, it first gives a brief summary of the Bank and its types of energy loans. It discusses the Bank's energy role, including policy formulation, structural adjustment and sector loans, power sector operations, coal, oil and gas operations, and the Energy Sector Management Assistance Program (ESMAP). The paper finally points out how firms can collaborate with the Bank and, to help in this understanding, it summarizes the cycle that a project goes through from the very first steps to its completion.

The Annexes contain information on oil, gas and power projects and energy sector loans. Specifically, they provide project descriptions, loan amounts and fiscal years of Board approval.

1/ This paper was prepared by Kay McKeough, Nigel Green, Jose Escay and Jean Becherer.

II. THE WORLD BANK AND ITS ENERGY ROLE

THE BANK AND ITS AFFILIATES

The World Bank Group comprises the International Bank for Reconstruction and Development (IBRD) and its affiliates, the International Development Association (IDA) and the International Finance Corporation (IFC). Their common objective is to raise the standards of living and promote economic development in developing countries by channelling financial resource and policy and technical advice to them. The President of the Bank also heads the International Center for the Settlement of Investment Disputes.

IBRD LOANS

The IBRD is owned by the governments of some 150 countries and its capital is subscribed by its member countries. It finances its lending operations from its own borrowings in the world capital markets, retained earnings and the flow of repayments on its loans. IBRD loans generally have a grace period of three-to-five years and are repayable over fifteen-to-twenty years. The interest rate the IBRD charges is the same on all of its loans but it is not fixed; it is related to its cost of borrowing and changes semi-annually. The current rate for second half of 1988 is 7.59%. Currently, IBRD lending amounts to about $19 billion per annum.

IBRD decisions to lend must be based on economic considerations and prospects for repayment. Specific projects are subject to detailed evaluations of the economic merits, financial feasibility, technical soundness, and the social and environmental impacts. Loans are made to a government or payment must be guaranteed by the government of the country in which the investment is made. The Bank's loans finance part of the foreign exchange element of the host country's portion of a project. Unlike export-import banks, the use of Bank loans are not tied to purchases of goods and services in any particular member country and most large contracts for goods and services are subject to international competitive bidding.

IDA CREDITS

The International Development Association (IDA) provides assistance for the same purposes as the IBRD, but primarily in the poorer developing countries with an annual per capita gross national product of less than $790 (in 1983 dollars). Ninety percent of the IDA money goes to countries with less than $400 per capita. More than fifty countries are currently eligible. The terms of IDA credits, which are made only to governments, are interest free with ten-year grace periods and forty to fifty-year maturities. In countries which are eligible for both, the Bank tends to provide IBRD loans rather than IDA credits for most energy sector development; however, there are still a few countries that obtain IDA credits for investment in the energy sector. In any case, IDA usually insists that onlending terms from governments to revenue-producing energy operations be based on market rates of interest.

IFC LOANS

The IFC promotes growth in the private sector of the developing countries, helps mobilize domestic and foreign capital for this purpose, and stimulates the flow of private capital into projects. Legally and financially, the IFC and IBRD are separate entities with separate staffs, but the IFC draws upon the Bank for administrative and other services.

The IFC can raise financing either directly through syndication of its loans, or by virtue of its participation in the project, can attract parallel financing from international capital markets. The IFC will finance a private energy company's share in a project regardless if its partner is private or government-owned or it can provide financing to a joint venture if the majority share of the joint venture is private. The IFC can take an equity position, provided that it is not a majority position in the project. IFC's total exposure in a project cannot exceed 25%. Government guarantees are not required.

In oil and gas projects the IFC can reduce the risk exposure of a private oil company and provide lending confidence to other private investors, especially in countries where it is difficult to raise capital. The interest rates charged by the IFC are higher than either the Bank's rate or the prime rate and are more in line with commercial lending.

THE BANK'S ENERGY ROLE

About one-fifth of total Bank lending is directed for energy, and lending for energy development has increased over the past seven years. Over $2 billion in Bank and IDA energy loans were approved in fiscal 1988 and cumulative energy lending has approached $34 billion. Besides its traditional lending for energy projects, the Bank is diversifying its lending instruments by providing increasing amounts for structural and sector adjustment loans and sector investment loans. The Bank also has increased its energy policy and advisory role, partly through advising on energy sector strategies and undertaking comprehensive energy assessments. The Bank is involved in natural gas and petroleum, electric power, coal, household and renewable energy, conservation and energy efficiency.

Through its non-financial assistance, the Bank can serve as a catalyst to induce development of the countries' energy resources. It suggests strategies to help governments put together least cost investment programs and to improve the investment climate for development of energy resources, recommends organizational change and system improvements, reviews the regulatory framework, assists with the selection of specialty consultants, and discusses pricing and resource allocation policies. The Bank has made a particular effort to encourage countries to open up the energy sector for investment to private companies and to use outside technical expertise when necessary. The Bank usually provides for technical assistance in its lending, whether for projects or sector adjustment.

STRUCTURAL ADJUSTMENT AND SECTOR LOANS

The Bank is placing greater emphasis on policy and institutional reforms and economic efficiency by lending for structural and sector adjustment aimed at improving macroeconomic or sectoral issues and programs, such as pricing, taxation and investment. The Bank also provides sector investment loans aimed at br. ng investments in line with economic priorities and ensuring that the are efficiently operated and maintained. These can be supported by fin. ce for broad categories of equipment, materials, services and civil works related to the sectoral program.

Sector adjustment lending has become an increasingly important instrument in the Bank's lending initiatives and these loans now amount to about 15 percent of total Bank and IDA commitments. Sector adjustment lending is designed to support sectoral programs of policy and institutional change, including restructuring of capacity, and to increase resource mobilization and efficiency in resource allocation.

The Bank has been increasing its policy-based energy sector loans, and as much as one-third of future energy lending may be of this type. Unlike the Bank's traditional project loans, funds from sector loans are not always earmarked for specific components of an investment program or for a specific project, and, in fact, they can be used for general imports or other expenditures. When lending either for energy projects or general sector investment, the Bank will support policies that lead to efficient development of the sector. It therefore voices concern with policies such as the role of the government, pricing, the regulatory framework, the environment, efficient usage of energy, and demand management. A key issue is the appropriate framework for sector investments including sound investment policies, ownership issues, organizational structure and institutional efficiency.

POWER SECTOR OPERATIONS

More than two-thirds of the Bank's energy lending is directed to electric power which amounts to about $2 billion per year and over $19 billion in the past nine years. Most of these loans and credits, representing about 10% of the total power investment in developing countries, was used to finance specific investment projects. Major power investments are sometimes included in more general energy sector loans. Consistent with the Bank's role as lender of last resort and taking advantage of the essentially untied nature of Bank loans and credits, transmission and distribution, including rural electrification, now absorb about one-half of the Bank's power lending. Transmission and distribution receive Bank support because substantial co-financing and bilateral assistance are directed to discrete, large investments such as generation projects, thus reducing the need for Bank assistance for these projects. The remainder of the Bank funds cover generation projects of all types, including thermal coal, hydropower, oil/gas thermal, geothermal, technical assistance, rehabilitation and similar activities including cogeneration. The Bank has not been called upon to finance a nuclear plant, but it does cooperate with the IAEA in reviewing the economic and financial aspects of development programs which may include nuclear power.

The Bank is concerned with the overall structure and policies of a country's power sector; as a condition of its participation, the most important changes requested by the Bank generally concern rates and tariffs, financial structure, and operational efficiency improvement such as reduction of system losses and better metering, billing and collection procedures. The Bank will also provide assistance so that these objectives can be achieved and it cooperates in the support of planning, training, and improved operational performance.

The Bank's principal objective of institution building in the power sector is to create both the environment and the ability for power entities to become managerially self sufficient. The Bank promotes the establishment of well-focused financial policies, encouraging continuity and self sufficiency as well as technology transfer and training. Environmental impacts, especially resettlement issues, are of concern to the Bank in lending for these projects.

Bank policies encourage autonomy and the participation of the private sector where appropriate. The Bank can assist in organizing cofinancing both from public or private sources. Also, through the implementation of appropriate pricing policies, the Bank helps to mobilize local resources for expansion.

COAL OPERATIONS

The Bank remains active in coal mining projects. They are often associated with a power plant project, the reserves being developed to serve as a fuel source for a power plant or with a power plant being located adjacent to the coal mine as part of an integrated project. Most of the production from the projects in which the Bank is involved is used in industrial and power plants; the coal can be for domestic consumption or for export. The Bank will lend for coal exploration, including the delineation of the deposit and for coal mine development. These projects can include the requisite infrastructure as well as provisions for ameliorating environmental impact.

OIL AND GAS OPERATIONS

The Bank funds exploration, promotion, exploration/appraisal and petroleum development projects including the downstream and infrastructure. Bank support for a project may also add stability to contractual terms and can alleviate concerns by lenders about non-commercial risks.

The Bank has in the past financed exploration promotion projects in areas where no significant exploration had taken place or where no company held leases or was negotiating a contract. These projects were designed to provide the host country assistance in attracting private sector risk capital for exploration. The projects included the acquisition, collection and/or reinterpretation of geological and geophysical data and the appropriate packaging of such data. There were usually provisions for training.

Exploration/appraisal projects usually include the acquisition and evaluation of geological, geophysical, and geochemical data. They can include exploration and appraisal drilling programs, but the Bank usually finances

them as joint ventures between national oil companies private sector partners or in preparation for private sector involvement. The Bank will consider financing a "farm-in" by a national oil company.

Petroleum development projects support the production of oil and gas from known reserves. They normally include the drilling of development wells and the installation of infrastructure, pipeline facilities and possibly storage and export terminals. Whereas petroleum development is usually financed by international oil companies and borrowings on capital markets, the Bank will finance certain projects which are unable to attract private participation and yet are economically viable. These include natural gas development both upstream and downstream, rehabilitation and/or secondary recovery from producing fields, early production facilities, and heavy oil development as well as common carrier pipelines and facilities and refinery rehabilitation and upgrading. These projects are generally undertaken in the context of supporting present or future private sector investment.

The Bank is emphasizing assistance for energy supplies for the domestic market which could not be financed by export earnings, with special application to natural gas. A project could include non-associated gas field development, gas treatment facilities, gas transmission and distribution systems, LPG processing plant, pipeline, storage and export terminal facilities. The Bank could also finance the power and fertilizer plants that would utilize the gas. Even if it is not involved in the upstream or transmission phases, the Bank may lend for municipal distribution projects that generally involve the construction of a new system or the rehabilitation and expansion of existing systems.

If it appears that participatory Bank funding for a project might be desirable, it can speed up the process and create a better understanding if the international private company participant talks to the Bank staff on an informal basis at the preliminary stages. (The National Oil Company however must approach the Bank to begin the official project evaluation process). The company's analysis of a project can be useful to the Bank in its own appraisal and the two can proceed in tandem. It is also beneficial to the Bank for its planning to know what financing and services the private company participant will provide and vice versa. Delays could be experienced if the borrower seeks Bank assistance only after the project planning is well underway.

ENERGY SECTOR MANAGEMENT ASSISTANCE PROGRAM (ESMAP)

In 1980 the Bank, in conjunction with the United Nations Development Programme (UNDP), introduced the Energy Assessment Program. It was designed to provide the energy policymakers of the developing countries with a reliable and comprehensive survey of their nations' energy sectors emphasizing policy decisions and priorities that needed to be addressed. The issues included energy supply options, demand management options such as pricing policies and energy efficiency in the subsectors, the linkages between the energy sector and the macroeconomy, the planning capacities of energy agencies and the coordination between the various national energy institutions. Assessment reports have been completed on over 60 countries.

The assessment program has proven to be a useful tool for developing countries to identify essential projects in the energy field. Subsequently, in 1983 the Energy Sector Management Assistance Program (ESMAP) was instituted to supplement the assessment proposals facilitate implementation of energy policy recommendations and to help stimulate investment. The range of program activities includes household energy strategy, charcoal production, cooking stoves, new and renewable energy, forestry management, biomass, gas utilization, and petroleum management. Energy efficiency studies, including the power, transport and industrial sectors are an important part of the program. ESMAP provides preinvestment services, fuel substitution and pricing services and aid coordination. More than 130 activities have been completed or are ongoing under the program.

The two programs are an international effort; in addition to support by the UNDP and the World Bank, country donors provide some seventy percent ESMAP funding. Major country donors include the Netherlands, Canada, Switzerland, Norway, Sweden, Italy, Australia, the United Kingdom, Denmark, France, Finland, Ireland, Japan, New Zealand, Iceland and the USA.

Through the ESMAP follow-up activities, the Bank alerts prospective investors to available projects and investment opportunities. Over $500 million in projects originally identified under ESMAP activities have been financed by either private enterprise or multilateral and bilateral donors, including the Bank.

COLLABORATION WITH THE BANK

The Bank together with the borrower identifies priority projects and activities to be undertaken with Bank assistance. The Bank becomes involved early in the process to assure that key development plans, existence or creation of efficient implementing agencies, sound procurement policies, and the achievement of adequate rates of return.

The Bank's project lending staffs are organized by region under a Senior Vice President for Operations: LAC (Latin American and the Caribbean), EMENA (Europe, North Africa and the Middle East), Africa and Asia. Each of the regions has between four and six country departments, with one responsible for Bank operations in from one to fifteen countries. Within these country departments, there is a division handling energy, coupled with either industry, infrastructure or transport operations. These energy divisions are responsible for all energy sector loans and energy projects and they provide the guidance on the energy component of structural adjustment loans. Each region (LAC, EMENA, Africa and Asia) is supported by a Technical Department that includes energy specialists that provide technical support to the energy divisions in that region.

In addition, the Industry and Energy Department within the Senior Vice Presidency for Policy, Planning and Research provides a central energy policy and research function as well as prepares the ESMAP studies. The Department also serves to direct outside inquiries to the proper project or technical staff in Operations.

PROJECT CYCLE

The phases of a World Bank loan project comprise:

1. Identification - Concerned with selecting (identifying) projects that appear suitable for World Bank financing; includes feasibility studies to identify and prepare preliminary design of technical and institutional alternatives, and to compare respective costs and benefits; also entails sector review or analysis by World Bank to gain understanding of development strategy of the country and energy's role in such development.

2. Preparation - Involves a preparatory phase of close collaboration between the Bank and the borrower to consider technical, institutional, financial and economic conditions necessary to achieve a particular project's objectives. All important issues should be identified and, if possible, addressed fully in this phase. The Bank sends a pre-appraisal mission to ascertain aspects that need attention before a formal appraisal mission is undertaken.

3. Appraisal - After project has taken shape and preparation studies are near completion, the Bank reviews all aspects of the project, which may take 3-5 weeks in the field (appraisal mission). The appraisal lays the foundation for implementing the project and evaluating it when completed; appraisal covers technical, institutional, economic and financial aspects. An appraisal report is then written which serves as basis for negotiations with the borrower for the loan.

4. Negotiations - The Bank and borrower endeavor to agree on the measures necessary to ensure the success of the project; these agreements are converted into legal obligations. After negotiations with the borrower and after the loan documents have been drawn up, the project is presented to the Executive Directors for approval, and the country undertakes its own formalities for loan approval. Next the loan is signed. Legal documents ensure that the Bank and borrower are in agreement on broad objectives, specific actions necessary to achieve them and on a detailed schedule for project implementation.

5. Implementation and Supervision - After a loan is signed, the borrower implements the projects with the assistance of the Bank as supervisor and provider of technical assistance. The borrower makes progress reports on the project.

6. Evaluation - Following final disbursement of World Bank funds for a project, a completion report and (on a selective basis) an independent audit is performed.

A SUMMARY OF BANK OIL AND GAS PROJECTS (BY FY)

The following list summarizes by fiscal year the Bank (including IDA) oil and gas projects approved for lending in the seventeen-year period FY72-88.

FY72-88 WORLD BANK GROUP LENDING
FOR OIL AND GAS

FY	No. Projects	Oil & Gas US$ Millions
72	1	32.0
73	1	59.4
74	0	0.0
75	3	129.0
76	0	0.0
77	1	150.0
78	0	0.0
79	4	112.4
80	13	287.0
81	12	649.5
82	19	1,063.0
83	20	1,036.6
84	15	654.0
85	11	752.4
86	8	231.1
87	8	347.3
88	2	358.0
72-88	118	5,861.7

1/ The lending totals may not match those of the World Bank Annual Reports because some refinery projects are included here but were classified by the Bank as industry loans and some oil and gas components of power loans are included here but are not in the World Bank's oil and gas figures.

FY72-88 WORLD BANK GROUP LENDING FOR OIL AND GAS (BY COUNTRY)

LATIN AMERICA AND THE CARIBBEAN

ARGENTINA

	(ln amt-million)	(project amt-million)[1/]
Oil and Gas Engineering Ln 1880-AR (FY80)	$27.0	$49.6

To improve information on countrywide oil and gas reserves as basis for a rational program of field development, to assist YPF in locating favorable geological structures in the Northwestern Basin and to assist the government in studying the optimum development and utilization of the country's natural gas resources.

Oil and Gas Credit Ln 2031-AR (FY82)	$100.0	500.0

To provide long-term financing for about seven exploration and development subprojects and to help develop Banco Nacional de Desarrollo (BANADE) institutional capacity to appraise and supervise oil and gas subprojects.

Refinery Conversion Ln 2032-AR (FY82)	$200.0	$878.9

To assist YPF to achieve a better balance in the product mix in the two main refineries, specifically to convert the surplus low-value residual fuel oil into higher value lighter refinery products, to enable reduction of imports of light and middle distillates and to strengthen YPF'S internal management and help increase operational efficiency.

Refinery Supplemental (FY86)	$116

To provide supplemental financing for the refinery conversion project, (LN 2032-AR).

1/ Total cost as appraised.

Gas Utilization and Technical Assistance Ln 2592-AR (FY85)	$180	$802.6

To increase production of natural gas and associated liquids by improving gas production facilities, specifically financing the expansion of liquid recovery facilities at Campo Duran in Northern Argentina and the enlargement of the gas processing plant at Campo Duran, and to build two pipelines.

BOLIVIA

Gas and Oil Engineering Ln 3025-BO (FY80)	$16.0	$41.8

To establish by 1982 whether there are sufficient reserves of natural gas in the provinces of Santa Cruz, Chuquisaca, and Tarija to enable YPFB to cover the future requirements of Bolivia's expanded domestic market and gas exports to Brazil, as well as the existing contracts with Argentina, and to help the initial phase of a secondary recovery program in the Monteagudo oil field.

Vuelta Grande Cr 1719-BO (FY86)	$15	$47.9

To increase liquid hydrocarbon production and maintain self-sufficiency in petroleum supplies by completing the development of the Vuelta Grande retrograde gas condensate field in the south, the installation of a gas recycling plant, and the laying of gathering and injection lines.

COLOMBIA

Petroleum Project I Ln 2476-CO (FY85)	$130.0	$980.0

To help finance enhanced oil recovery at Ecopetrol's Casabe oilfield in the Middle Magdalena valley in central Colombia, to help Ecopetrol to develop other fields, and to construct in association with private oil companies a 290-kilometer pipeline along the norther border with Venezuela.

COSTA RICA

Petroleum Sector Ln 2019-CR (FY81)	$3.0	$3.9

To support efforts to explore and evaluate the country's petroleum resources and to develop a policy for the energy sector.

ECUADOR

Emergency Petroleum Reconstruction Project Ln 2803-EC (FY87)	$80	$101.9

To help finance reconstruction of the Trans-Ecuadorian crude oil and LPG pipeline to restore oil production and exports following the earthquakes that damaged major sections of the LPG pipelines. To enhance capacity to deal with the crisis, its aftermath, and emergency preparedness.

GUYANA

Petroleum Exploration Promotion Cr 1208-GU (FY82)	$2.0	$2.3

To provide for the services of specialists by the Ministry of Energy and Mines to help the government in preparing a promotional program to attract foreign oil companies.

HONDURAS

Petroleum Exploration Promotion Ln 1861-HO (FY80)	$3	$3.6

To support the government's efforts to discover petroleum by encouraging foreign oil companies to explore the most promising offshore areas.

JAMAICA

Petroleum Exploration Promotion Ln 2017-JM (FY81)	$7.5	$8.4

To help provide the technical and financial means to enable the Petroleum Corporation of Jamaica to play a major role in the comprehensive evaluation of the country's offshore oil reserves.

PANAMA

Energy Planning and Promotion Ln 1954-PAN (FY81)	$6.5	$8.0

To assist in accelerating petroleum exploration, improving energy planning and investigating the potential for the development of energy alternatives.

PERU

Petroleum Production Rehabilitation Ln 1806-PE (FY80)	$32.5	$50.7

To improve the financial situation and the technical capability of Petroperu by increasing oil production in the short-term by carrying out seismic surveys in the northeastern and central jungle areas and by updating and completing a feasibility and basic engineering study for secondary recovery projects.

Oil Production Enhancement Ln 2195-PE (FY83)	$81.2	$241.2

To ensure that Peru will not become a net importer, the intent of this project is to increase PetroPeru petroleum production by 40 million barrels over ten years.

Refinery Engineering Ln 2117-PE (FY82)	$5.3	$7.3

To review refinery operations and study ways of reducing operating costs through energy conservation, concentrating on the two refineries, La Pampilla and Talara.

URUGUAY

Refinery Rehabilitation Ln 2802-UR (FY87)	$24.4	31.7

To provide equipment and services to revamp and modernize the process units of the aging refinery in Montevideo; to stengthen through technical assistance the petroleum procurement, operations planning and control, and accounting budget systems of the Administracion National de Combustibles, Alcohol Y Portland; and to fund a study on pricing and crude import tariff systems.

AFRICA

BENIN

Petroleum Sector Technical Assistance Cr 1207-BEN (FY82)	$8.0	$10.0

To provide technical assistance to strengthen the government agency responsible for petroleum exploration and development, especially in the development of the Seme oilfied.

Seme Oil II Cr 1503-BEN (FY84)	$18.0	$45.3

To launch the second phase of the development of the Seme oilfield, some 15 kilometers off its southeastern coast, in order to fully develop proven oil reserves and to confirm possible additional reserves.

CONGO

Petroleum Sector Technical Assistance Cr 971-COB (FY80)	$5.0	$5.6

To provide assistance to the Ministry of Mines and Energy to strengthen its capacity to supervise exploration and development of petroleum resources and the distribution of products.

Dijibouti

Geothermal Cr 1488-DJI (FY84)	$6.0	$16.6

To assess geothermal energy reserves in order to confirm suitability for commercial exploitation, along with technical assistance to strengthen the country's geothermal research institute and for power studies conducted by the Electricite de Djibouti to determine technical and economic feasibility of incorporating geothermal power into its overall system.

EQUATORIAL GUINEA

Petroleum Sector Technical Assistance Cr 1304-EG (FY83)	$2.4	$2.7

To provide consultants to assist the country in strengthening the administration of the petroleum sector and in establishing an energy sector information system.

ETHIOPIA

Petroleum Exploration Promotion and Geothermal Cr 1386-ET (FY83)	$7.0	$9.5

To attract foreign oil companies to renew exploration efforts in the country and to establish the feasibility of geothermal energy development.

GHANA

Petroleum Exploration Cr 1373-GH (FY83)	$11	$12

To accelerate petroleum exploration through collecting, processing and evaluating seismic data, particularly in the Tano offshore area, and to provide exploration promotion assistance to the government.

Refinery Rehabilitation Cr 1446-GH (FY84)	$6.9	$18.3

To finance the preparation of detailed plans to rehabilitate the government-owned Ghanaian Italian Petroleum Company Ltd. refinery located at Tema; to improve its energy and operating efficiency; and to improve the national petroleum distribution system, focussing on reducing ocean freight losses and upgrading the crude oil handling system at Tema harbor as well as at the refinery.

Petroleum Production and Distribution Cr 1819-GH (FY87)	$15	$36.3

To supplement the near complete Tema refinery project by improving the system of procurement of crude oil and bulk marketing of the products to better coordinate them with the refining operation carried out by the Ghanaian Italian Petroleum Company and by rehabilitating the supply and distribution facilities of the Ghanaian Oil Company (GOIL).

GUINEA

Petroleum Exploration Exploration Cr 1438-GUI (FY84)	$8.0	$12.4

To assist the Ministry of Mines and Geology in identifying the country's oil potential so as to encourage exploration by international oil companies and to train the Ministry staff to interpret seismic work and geological field studies and to develop strategy.

GUINEA-BISSAU

Petroleum Exploration Promotion Cr 1095-GUB (FY81)	$6.8	$6.9

To promote the resumption of offshore hydrocarbon exploration by strengthening the capacity of the National Corporation for Petroleum and Mineral Research and Exploration (Petrominas) to evaluate and gather further geological and geophysical data, to negotiate exploration contracts with oil companies and to devise a petroleum accounting system.

Petroleum Exploration Promotion II Cr 1334-GUB (FY83)	$13.1	$23.3

As a follow-up project, to collect some 4,000 kilometers of new seismic data in shallow offshore areas.

IVORY COAST

Petroleum Exploration Ln 2189-IVC (FY82)	$101.5	$1,223.0

To help the development of the country's offshore petroleum resources by a consortium of oil companies headed by Phillips Petroleum Company by financing part of Petroci's share in the consortium's expenditures.

KENYA

Oil Product Pipeline Ln 1173-KE (FY75)	20.0	82.9

To save railroad transportation costs by constructing a 452 kilometer refined products pipeline from Mombassa to Nairobi.

Petroleum Exploration Promotion Ln 2065-KE (FY82)	$4.0	$5.3

To prepare a petroleum exploration promotion program through technical and legal assistance, training and an aeromagnetic survey.

Geothermal Exploration Cr 1486-KE (FY84)	$24.5	$34.3

To help accelerate the development of local energy sources and to define more clearly the country's geothermal potential in the regions of Olkaria and Eburru, including technical assistance for studies on the organization of the country's institutions for geothermmal development, the potential domestic natural gas markets and oil shale deposits.

Petroleum Exploration II Technical Assistance Cr 1675-KE (FY86)	$6.0	$9.6

To strengthen the National Oil Corporation of Kenya, Ltd's capabilities for promoting the exploration program; to provide a training program, and to conduct a petroleum products supply study.

LIBERIA

Petroleum Exploration Promotion Ln 1907-LBR (FY81)	$5.0	$6.1

To undertake 2,500 kilometers of seismic surveys of Liberia's offshore to be interpreted and integrated with available data; to assist the Ministry of Lands and Mines with exploration; and to provide technical assistance.

Second Petroleum Technical Assistance Cr 1580-LBR (FY85)	$2.6	$3.4

To provide assistance to enable the Bureau of Hydrocarbons to adopt effective policies and to manage geological and geophysical data and to acquire and analyzing new onshore data.

MADAGASCAR

Petroleum Exploration Promotion Cr 1016-MAG (FY80)	$12.5	$14.6

To support the government's efforts to develop a domestic supply of hydrocarbons and to improve planning of the energy sector.

Tsimiroro Heavy Oil Exploration Cr 1298-MAG (FY83)	$11.5	$18.0

To provide funds for gathering data on the Tsimiroro deposit in order to attract investment from private oil companies as well as for an engineering study for a future pilot plant at Tsimiroro and a related study on the feasibility of upgrading heavy oil.

MALI

Petroleum Exploration Promotion Cr 1134-MLI (FY81)	$3.7	$4.0

To help monitor exploration by oil companies and interpret the results of such exploration; to investigate known oil shale deposits; and to elaborate a national energy policy.

MAURITANIA

Petroleum Exploration Promotion Cr 1175-MAU (FY82)	$3.0	$3.2

To employ experts for exploration promotion purposes and to help finance a joint study of the sedimentary basin shared with Senegal.

MOZAMBIQUE

Technical Assistance and Rehabilitation Cr 1806-MZ (FY87)	$20	$31.8

To rehabilitate the physical facilities of the Electricity Company of Mozambique and the National Petroleum Supply Company, to provide vehicles and equipment to the two organizations, and to provide operational support for three years in managing transport fleets and in operating power and petroleum handling facilities. Technical assistance will be provided to design and implement management and financial systems.

NIGERIA

Gas Technical Assistance Sector Ln 2390-NIR (FY84)	$25	$33.0

To help formulate and implement the country's national gas policy, prepare the first major infrastructure project in the gas sector and strengthen the country's capacity to develop gas resources; more specifically, assistance for the basic engineering of the Escravos-Lagos pipeline gas system, procurement, a training program for the national oil company (NNPC) staff, and technical services to help NNPC conduct studies on future gas supply expansion for price and marketing strategies.

SENEGAL

Petroleum Exploration Promotion Cr 1323-SE (FY83)	$9.5	$25.2

To study onshore and offshore seismic data for promotion and provide technical assistance to Societe des Petroles du Senegal (Petrosen) and to the Directorate of Mines and Geology.

SOMALIA

Petroleum Exploration Promotion Cr 1043-SOM (FY80)	$6.0	$7.2

To assist in compiling and evaluting geophysical and geological data, updatiang the legal framework and devising a exploration promotion strategy along with training and foreign fellowships in the Ministry of Mineral and Water Resources to strengthen energy planning capabilities.

Afgoy Gas Development Cr 1464-SOM (FY84)	$18	$24.5

To carry out the first phase of a two-stage program to develop gas reserves at Afgoy in the southeast and to prepare the second stage of the development of Afgoy (which will include the construction of a pipeline to Mogadishu); to help the government to determine its investment requirements and options in the power sector; to determine the demand and economic uses for natural gas, and to formulate a gas pricing policy.

SUDAN

Petroleum Technical Assistance Cr 1513-SU (FY85)	$12	$13.3

To finance the hiring of experts to help collect and evaluate geological and geophysical data; train local staff; assist with the economic analysis and monitoring of contracts; design and carry out a number of geological and geophysical studies; and study policy issues including the use of domestic oil and gas resources.

TANZANIA

Songo Songo I Cr S027-TAN (FY80)	$30.0	33.0

To assess the hydrocarbon potential in the Songo Songo island area with onshore and offshore drilling and to help strengthen the Ministry of Water, Energy and Minerals' capability in energy sector planning and policy formulation.

Songo Songo II Cr 1199-TAN (FY82)	$20.0	$44.8

Second phase of a program to explore for il and to confirm the extent of the gas reservoir in Songo Songo.

Petroleum Technical Assistance Cr 1604-TAN (FY85)	$8.0	$11.0

To relieve the bottlenecks and reduct waste in the distribution of the country's petroleum products; in the longer term to lay the groundwork for rationalizing the distribution system and for developing a strategy for the use of indigenous gas resources and to maintain gas exploration efforts by the private sector.

UGANDA

Petroleum Exploration Promotion Cr 1561-UG (FY85)	$5.1	$6.1

To attract oil companies to explore for exploration mostly in the western part of the country and to assist in setting up the new Petroleum Unit in the Geological Survey and Mines Department.

ZAIRE

Petroleum Exploration Cr 1409-ZR (FY84)	$4.5	$5.3

To expand petroleum exploration in small fields in the Coastal Basin and to hire technical experts for the Department of Mines and Energy to improve the availability of reliable statistical information and to improve their technical capabilities.

ZAMBIA

Refinery Modification Engineering Ln 2151-ZA (FY82)	$5.1	$5.8

To provide engineering services to determine the most appropriate process for ensuring the refinery's ability to meet the demands of the market, taking into account Zambia's potential for using excess capacity in the refinery to meet the requirements of neighboring Zimbabwe, Malawi, Botswana, which have no operating refineries.

Petroleum Exploration Promotion Ln 2152-ZA (FY82)	$6.6	$8.1

To support the government's first effort to survey its sedimentary basins and to interpret survey data and to establish a petroleum unit in the Ministry of Mines to handle the petroleum exploration promotion project.

Tazama Pipeline Cr 1627-ZA (FY86)	$3.1	$4.1

To carry out a survey to determine the rehabilitation needs of the 1700 kilometer Tazama oil pipeline, which runs from the port of Dar es Salaam, Tanzania to the refinery in Ndola in central Zambia.

ZIMBABWE

Petroleum Fuels Study Cr 1296-ZIM (FY83)	$1.2	$1.4

To determine the least cost of securing petroleum fuel supplies considering the following options: importing gasoline and diesel oil, refining crude oil at a refinery operated by PETROMOC in Mozambique, rehabilitating the CAPREF refinery at Peruka or importing products from Zambia's INDENI refinery.

ASIA

BANGLADESH

Bakhrabad Gas Development Cr 1091-BS (FY81)	$85.0	$164.0

As part of the effort to develop the Bakhrabad gas field in the Comilla district in eastern Bangladesh, to complete five wells, a gas transmission pipeline from the Bakhrabad field to Chittagong and a gas distribution system to supply major consumers; and to provide technical studies and training.

Energy Efficiency and Refinergy Rehabilitation Cr 1357-BD (FY83)	$28.5	$36.0

To increase the capacity utilization of the refinery facilities in Chittagong by 15%, and to initiate a national energy conservation program which will include feasibility studies for the potential uses of natural gas.

Petroleum Exploration Promotion Cr 1402-BD (FY84)	$23.0	$25.5

To further the government's efforts to stimulate interest among foreign investors to resume petroleum exploration by providing support to the Bangladesh Oil Gas and Minerals Corporation (Petrobangla) in the technical, accounting, and legal areas, leading to three promotional campaigns.

Second Gas Development Cr 1586-BD (FY85)	$110	$239.4

To appraise the main gas fields in Kasilasthila, Rashidpur, and Beani Bazar in Northeastern Bangladesh to provide a preliminary basis for their long-term development; to build a north-south pipeline of 117 miles from the Kailashtila gas field to the main gas transmission grid in Ashuganj if the appraisal results are encouraging; to provide distribution facilities to small local consumers along the pipeline route; and to design and install gas and condensate treatment facilities at three sites and construct a 10-mile condensate line.

Refinery Modification/LPG Cr 1749-BD (FY87)	$47	$81.3

To provide for refinery modification at the facilities of Eastern Refinery Limited for LPG recovery, storage and distribution.

BURMA

Gas Development and Utilization Project Cr 1840-BU (FY88)	$63

To develop and use natural gas from the Payagon field and to provide technical assistance and training. Includes gas field development, transmission and distribution, appraisal drilling for Phase II and LPG/CNG Pilot Scheme.

CHINA

Petroleum I Daqing Oilfield Ln 2252-CHA (FY83)	$162.4	$674.3

As a vehicle for introducing modern technology into China's petroleum industry, to drill 515 oil wells and 206 water injection wells, to study and update current field practices; to carryout seismic surveys; to established three operationally-oriented research laboratories and a computer center; and to upgrade skills of oil industry personnel.

Petroleum II Zhong Yuan Oilfield Ln 2252-CHA (FY83)	$100.8	$499.8

To continue the process of introducing modern technology to the Chinese petroleum industry; to develop the South and East Wenliu fields in the Zhongyuan basin about 500 kilometer south of Beijing; to provide training and computer facilities, and to construct a liquefield petroleum gas plant to process one million cubic meters per day of associated gas by 1986.

Petroleum III Karamay Petroleum Ln 2464-CHA (FY84)	$100.3	$753.5

To explore the potential of the Karamay oilfield located in the Junggar Basin in northeast China, along with seismic and drilling work, and studies of geological risks, the potential demand for natural gas from the South China Sea, the designb of pilot projects for thermal recovery of heavy oil and refining methods.

Weiyuan Gas Field Technical Assistance Ln 2580-CHA (FY85)	$25.0	$30.0

To provide reservoir and production data on the Weiyuan gas field located in the southern part of the Sichuan Basin in central-south China, to update information obtained through less sophisticated methods, and, in the long-term, to assist the South West Mining District to develop a more systematic approach to the rehabilitation of gas fields with technologically complex production problems.

Liaodong Bay Petroleum Appraisal & Technical Assistance Ln 2708-CHA (FY86)	$30	$83.8

To assist in the appraisal of Bohai Oil Corporation's oil and gaS condensate discovery in Liaodong Bay in northeast China, in the planning and financing of an optimum program for developing the discovery, and in strengthening the Corporation's capabilities in offshore petroleum operations by providing technical assistance and training.

INDIA

Bombay High I Ln 1473-IN (FY77)	$150.0	$571.0

To help finance the development of the Bombay High and Bassein oil and gas fields located near Bombay to include the construction of facilities required to produce up to 140,000 bpd of oil and 2.2 mmcm/d of natural gas from the two fields and the facilities to process, transport, store and deliver the oil and natural gas from these fields at full production.

Second Bombay High Offshore Development Ln 1925-IN (FY81)	$400.0	$858.2

To compleete the development of the southern and central areas of the Bombay High fields and thus help it to achieve a production rate of 240,000 bpd by mid-1982.

Refineries Rationalization & Energy Conservation Ln 2123-IN (FY82)	$200.0	$1085.7

To expand the capacity of four refineries; to install secondary processing facilities to convert fuel oil into higher value products; to expand petroleum tankage and distribution facilities; and to finance facilities to reduce energy requirements and control pollution.

Krishna-Godavari Petroleum Exploration Ln 2205-IN (FY83)	$165.5	$633.8

To assist the Oil and Natural Gas Commission (ONGC) to focus and accelerate its exploration activities in specific areas of the Krishna-Godavari basin.

South Bassein Gas Development Ln 2241-IN (FY83)	$222.3	$701.5

To develop the South Bassein field located in the Arabian Seas consisting of four offshore platforms for drilling, processing, gas flaring, and living quarters for the 125 personnel, a submarine pipeline from South Bassein to Umrat and a buried pipeline from Umrat to the Hazira fertilizer complex, and finally pipeline to be built from the South Bassein processing platform to the existing Bombay High gas and crude oil transmission line.

Cambay Basin Petroleum Ln 2403-IN (FY84)	$242.5	$954.3

To increase the production of oil and gaS from the onshore Cambay Basin, located in Gujaral State in western India.

Oil India Ltd. Ln 2785-IN (FY87)	$140	$584

In assisting Oil India Ltd., the project comprises application of production improvement and gas reinjection schemes and associated gas supply network in the partially depleted Assam oil fields, exploration in OIL's new gas-prone exploration area in Rahasthan and for deep gas in he Kumchai area of the State of Arunachal Pradesh, and strengthening OIL's technical and institutional capabilities through technical assistance, training and purchase of equipment for research and development.

Western Gas Development Project Ln 2904 (FY88)	$29.5 million	$1.3 billion

To develop the second phase of the South Bassein gas field and the construction of associated gas treatment facilities; to construct the Heera-Uran transmission line to Bombay; to appraise and develop the Gandha gas condensate field; provide for seismic survey of offshore fields; to perform studies of optimal gas utilization on the Western Region.

INDONESIA

City Gas Distribution Ln 2690-IND (FY86)	$34	$86

To develop the gas distribution network and enable industrial consumers to switch from liquid fuels to natural gas by strengthening Perusahaan Umum Gas Negara (PGN), the gas utility, adding to the existing PGN network in Jakarta, Bogor and Medan to encourage small and medium-sized industries to use natural gas, repairing or replacing defective pipelines, providing technical assistance and training programs for PGN staff, establishing a program to help industrial users convert their plants to natural gas, and finally helping to finance studies on appropriate fuel prices and on liquefied petroleum gas.

NEPAL

Petroleum Exploration Technical Assistance Cr 1260-NEP (FY82)	$9.2	$10.9

In order to attract foreign oil companies to undertake petroleum exploration, to finance a reconnaissance seismic survey of 800 line-kilometers in the Terai Basin to identify the most prospective sections, to help the government in subsequent negotiations with oil companies, and to provide geophysics courses and on-the-job training to the Department of Mines and Geology.

PAPUA NEW GUINEA

Petroleum Exploration Technical Assistance Cr 1279-PNG (FY83)	$3.0	5.6

To help finance support for the Government in their effort to promote oil and gas exploration.

PHILIPPINES

Geothermal Exploration Ln 2203-PH (FY83)	$37.5	$69.4

Executed by the Philippine National Oil Company (PNOC), to determine through exploratory drilling the commercial viability of geothermal prospects at Bacon-Manito and Palinpinon; to provide a basis for facilitating geothermal agreements with the private sector; and to prioritize areas for exploration and subsequent development, including other uses of geothermal steam.

Petroleum Exploration Promotion (two loans) Ln 2201/2202-PH (FY83)	$13.5 $24.0	$69.4 (combined)

For use of the Bureau of Energy Development and PNOC, to finance aeromagnetic surveys, offshore seismic reconnaissance surveys and integrated geological studies designed to increase the geolocis understanding of petroleum prospects; to finance onshore seismic studies and possible exploratory drilling in PNOC areas in Mindoro, Cotabato and Cebu where small discoveries, insufficient to attract foreign investors may be made; and to interest private oil companies in joint venture exploration agreements with PNOC.

THAILAND

Natural Gas Development Engineering Ln S-10-TH (FY79)	$4.9	$5.7

To help finance the first phase in the development of the country's natural gas pipeline by 1981; includes services for engineering, financial and project management as well as training advisory assistance to the Natural Gas Organization of Thailand.

Second Natural Gas-Pipeline Ln 1773-TH (FY82)	$107.0	$514.0

To support a project to construct a pipeline system to transport gas from the offshore Unocal field and to distribute it to industrial consumers, chiefly power generating stations in South Bangkok and Bank Pakong, 60 km southeast of Bangkok; to provide special studies (refinery expansion, gas utilization and energy conservation) for a framework for a comprehensive energy strategy for Thailand.

LPG Project Ln 2184-TH (FY82)	$90.0	$600.0

To construct a 350 million standard cubic feet per day capacity gas plant complex at Rayong on the east coast to be fed by natural gas from the Unocal fields in the Gulf of Thailand, also included are technical assistance, transfer pipelines, a marine terminal, jetty bulk storage and distribution facilities at the main complex, central bulk storage and distribution facilities in Bangkok and Laem Chaband and at five regional centers throughout the country to facilitate marketing of products.

Bangchak Oil Refinery Restructuring Ln 2548-TH (FY85)	$85.0	$143.8

To rehabilitate the Bangchak Oil Refinery near Bangkok, including energy-saving equipment and an anti-pollution plant, flood protection and a study to determine what modifications or expansions may be needed in Thailand's refineries to balance domestic demand and supply of petroleum products.

Energy III (Sirikit Petroleum) Ln 2639-TH (FY86)	$33	$432.0

In an effort to develop the Petroleum Authority of Thailand (PTT) as an effective joint venture partner with international oil companies, PTT is being assisted in its acquisition of 25% share in the development of the Sirikit and Sirikit West oilfields in northern Thailand, particularly to carryout further exploration in the same concession area. Institutional technical assistance and training for PTT is included.

EUROPE, MIDDLE EAST, AND NORTH AFRICA

EGYPT

Gulf of Suez Gas
Ln 1732-EGT (FY79)

To help finance gathering, processing, and transporting associated gas from oilfields in the Gulf of Suez to be used principally as fuel for electric power generation and cement manufacture and as a feedstock for a fertilizer plant.

Cairo Gas Distribution Ln 1024-EGT (FY80)	$50.0	$155.0

To help finance the construction of a high-pressure gas pipelines, an odorizing unit, four pressure-reduction stations, a distribution network of medium density polyethylene pipes and related connection services, external and internal installation of pipes in households and related services; the gas to be used to supply a gas distribution network for domestic consumers in four districts of Cairo and to provide fuel to two gas turbine plants.

Western Desert Exploration Ln 1928-EGT (FY81)	$25.0	$32.5

As part of an exploration project in the Western Desert, to provide seismic survey, drilling, testing and data processing and technical assistance.

Abu Qir Gas Development Ln 2103-EGT (FY82)	$90.0	$189.0

To double gas production from the Abu Qir gas field, located offshore in the Mediterranean Sea 35 miles from Alexandria, the project would provide for an offshore production platform with nine gas wells, a utility platform, ancillary facilities, submarine pipelines and onshore facilities for gas separation, gas dehydration, a condensate stabilization unit, a slug catcher, a flare system, a liquefied petroleum gas plant, and two truck loading stations.

HUNGARY

Petroleum I Ln 2398-HUN (FY84)	$90.0	$519.7

To help arrest the decline in domestic oil and gas production through a series of priority investments in exploration, field development, rehabilitation and enhanced oil recovery. Technical assistance is provided.

IRAN

National Iranian Oil Co. Pipeline Ln 805-IRN (FY72)	$32.0	$46.0

To help finance the expansion of Iran's pipeline system carrying oil products from production centers to internal markets.

JORDAN

Energy Development Petroleum Exploration Comp. Ln 2371-JO (FY84)	$5	$68.0 (including power)

To assess power-subsector development, as well as contribute to petroleum exploration and the improvement of energy efficiency and planning. The petroleum exploration component of the loan amounted to $5 million.

MOROCCO

Petroleum Exploration Ln S-18-MOR (FY80)	$50.0	$90.0

To complete exploration of current producing areas as well as assess the petroleum potential of unexplored basins. Technical assistance is provided for exploration management.

Petroleum Exploration and Appraisal Ln 2271-MOR (FY83)	$75.2	$106.2

To help accelerate the exploration and development of Morocco's petroleum potential by completing the exploration of producing areas where marginal prospects still exist which may be developed economically and assess the petroleum potential of basins yet unexplored and develop leads which could attract foreign investments. (Second loan provided to confirm commerciality of Meskala gas find in the Essaouri basin).

Oil Shale Ln 2109-MOR (FY82)	$20.0	$25.7

To construct and operate a test station to analyze shale, evaluate alternative reporting processes and prepare a feasibility study for commerciality.

PAKISTAN

Fourth Sui Northern Gas Ln 1102-PAK (FY79)	$60.0	$103.2

To help finance the building of a pipeline to transport gas for fertilizer production at Multan, Lahore and in the northwest.

Toot Oil and Gas Development Cr 867-PAK (FY79)	$30.0	$73.0

To increase domestic production through expansion of output from the Toot field, located in the Potwar Basin of northern central Pakistan, through an oil drilling program including eight wells and through assistance to the Oil and Gas Development Corporation (OGDC) in strengthening its operational capabilities; also to provide the means for evaluating the potentials of the recently discovered Dhodak field.

Refinergy Engineering and Energy Efficiency Ln 2218-PAK (FY83)	$12.0	$16.0

To provide preparatory work for a hydrocracker project in Karachi, to allow secondary processing of domestic fuel oil, and to support industrial energy conservation measures.

Sui Northern Gas Pipeline V Ln 2324-PAK (FY83)	$43.0	$196.8

To expand the Sui Northern Gas Pipeline system to transmit and distribute an additional 70 million cubic feet of gas daily, including the installation of a gas purification facility, construction of about 430 miles of high pressure transmission pipelines, installation of five turbine/compressor units in existing compressor stations, service lines for some 25,000 new connections to the system each year between 1984 and 1986 and new and upgraded telecommunciations facilities for the Sui Northern Gas Pipelines Limited.

Petroleum Exploration Ln 2351-PAK (FY84)	$51.5	$107.1

To encourage joint-venture exploration by both domestic and foreign private oil companies by drilling six exploratoroy wells on natural gas prospects in the Potwar basin in northern Pakistan and by using seismic profiles totalling about 3,000 kilometers to identify new exploration areas.

Toot Oil and Gas II Ln 2374-PAK (FY84)	$30	$63.8

To accelerate oil and gas production in the Toot oilfield southwest of Islamabad in the Punjab province and to strengthen the technical capabilities of the national oil company, the Oil and Gas Development Corporation, specifically for specialized technical services.

Petroleum Joint Venture Ln 2553-PAK (FY85)	$55.0	$282.3

To perform exploration/appraisal work in two areas with new joint ventures as well as technical assistance to the Ministry of Petroleum and Natural Resources.

Refinery Energy Conservation and Modernization Project Ln 2842-PAK (FY87)	$21	$51

To enable National Refinery Ltd. to improve its refinery efficiency, reduce energy consumption, increase crude oil processing capacity and train staff.

PORTUGAL

Petroleum Exploration Ln 2024-PO (FY81)	$20.0	$26.0

Concentrating on six blocks in the onshore portion of the Luysitanian Basin a geological structure on Portugal's western coast, to help Petroleos de Portugal (PETROGAL) evaluate the potential of its concession areas, to improve its current exploration strategy, and to strengthen its overall technical capabilities in petroleum exploration.

PEOPLE'S DEMOCRATIC REPUBLIC OF YEMEN (PDRY)

Petroleum Exploration Promotion Cr 1216-YDR (FY80)	$9.0	$10.0

To assist the Petroleum Exploration Department with a 15-month seismic survey providing seismic profiles over a large portion of the onshore area where petroleum potential exists.

ROMANIA

Videle/Balaria Enhanced Oil Recovery Ln 2148-RO (FY82)	$101.5	$454.2

To introduce the in-situ combustion process to two fields, Videle and Balaria, located 45 kilometers west southwest of Bucharest, which includes drilling of about 91 wells for air injection and oil production and the construction of 24 oil and gas separation centers, a central oil treatment, storage and pumping facility for handling emulsions, a facility to treat water before reinjection and air injection facilities, and approximately 1300 kilometers of pipelines for air and water injection, gas supply and fluid collection and disposal.

TUNISIA

Natural Gas Pipeline Ln 1864-TUN (FY80)	$37.0	$88.0

To construct about 330 kilometers of buried pipelines and 170 kilometers of branch lines to transport gas f rom the Algeria/Italy Intercontinental Gas Pipeline to Tunis, Sousse, Gafsa and Tadjerouine; and to determine the feasibility of expanding domestic gas usage.

TURKEY

Bati Raman Enhanced Oil Recovery Engineering Ln 2013-TU (FY79)	$2.5	$3.0

To evaluate enhanced oil recovery techniques.

Petroleum Exploration Ln 1916-TU (FY81)	$25.0	$45.0

To conduct regional and basin geological studies which will integrate existing geological, geophysical, and well data in southeastern Turkey in order to identify priority areas for seismic surveys and subsequent exploratory drilling and also to provide technical assistance.

Bati Raman EOR Field Demonstration Ln 1917-TU (FY81)	$62.0	$102.0

To finance a field demonstration test of carbon dioxide injection into the oil reservoir as a means of enhanced oil recovery to be carried out in 10% of the Bati Raman reservoir that will require the drilling of wells at the Dodan gas field to produce CO2 gas, construction of a 75-kilometer-long

pipeline to transport the gas, the drilling of five additinal wells at Bati Raman and the preparation of 30 wells to handle CO2 injection and oil production, and to assist in the expansion of production from the newly discovered northern extensions of the Raman oil field through the drilling and completion of 18 new production wells.

Thrace Gas Exploration Ln 2327-TU (FY83)	$55.2	$98.9

To assess the hydrocarbon potential of the Thrace basin in western Turkey with approximately 1800 line-kilometers of seismic surveys and 11 exploration wells along with geological, sedimentological and development studies to determine the optimum method of development.

YEMEN ARAB REPUBLIC (YAR)

Petroleum & Geothermal Exploration Promotion Cr 1216-YAR (FY82)	$2.0	$2.4

To reactivate private oil companies' interest in undertaking further exploration by developing a comprehensive report on the petroleum geology of the Red Sea basin and by confirming the potential of exploitable geothermal reservoir in the Dhamar-Radaa area of the Yemen highlands; in addition to provide assistance for a feasibility study to evaluate the economics of a pipeline system for the supply, storage, and transportation of petroleum products from the ports of Hodeidah and Mocha.

Technical Assistance to the Petroleum Sector Cr 1702-YAR (FY86)	$12	$17

To provide technical assistance to the Oil and Mineral Resource Ministry in the development of technical abilities in the petroleum sector.

Geothermal Exploration Cr 1484-YAR (FY84)	$13.0	$15.3

To drill approximately four deep exploratory wells, and to provide for technical assistance, consultancy services, training on further exploration and development.

YEMEN, PEOPLE'S DEMOCRATIC REPUBLIC

Petroleum Exploration Promotion Cr 1050-YDR (FY80)	$9	$10

To support a 15-month seismic survey to accumulate high-quality data and uncover prospects sufficiently attractive to oil companies to undertake exploration; and to provide technical assistance to Petroleum Exploration Department for survey work and training.

YUGOSLAVIA

Naftagas Pipeline Ln 916-YU (FY73)	$59.4	$130.4

To construct gas pipelines; to introduce large-scale use of natural gas in Vojvodina, Servia and Bosnia-Herzegovina; and to develop a national oil pipeline to transport crude to inland refineries and neighboring countries.

Naftavod Ln 1173-YU (FY75)	$49.0	

To help in financing the building of an oil pipeline and an oil receiving port, transportation and storage facilities to inland refineries and to Eastern Europe.

First Petroleum Sector		
Ln 2595-YU (FY85)	$55.0	$371.4
Ln 2596-YU	$35.0	$167.1
Ln 2597-YU	$ 2.5	$ 14.0

To support gas exploration and development by three independent Yugoslav petroleum enterprises, INA-Naftaplin in Croatia, Nafta-Gas in Vojvodina, and the Energoinvest Refinery at Bosanski Brod in Bosnia-Herzegovina, during 1986-89, including the expansion of exploration activities to the more complex and deeper areas acceleration of exploration by promoting to international petroleum companies areas that have good prospects but are not yet productive, strengthening the capabilities of Yugoslav companies to develop gas reserves under high pressure and temperature, introduction of underground gas storage to help meet seasonal demand, and technical assistance and training for staff of INA-Naftaplin and Nafta-Gas.

A SUMMARY OF BANK POWER PROJECTS (BY FY)

The following table summarizes by fiscal year the Bank (including IDA) power projects approved for lending in the nine-year period FY80-88. The table also shows the breakdown by type of power system component:

FY80-88 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

FY	No. Projects	Hydro	Oil/Gas Thermal	Coal Thermal	Geo-Thermal	Trans. Dist.	Rural Elect.	Power Sector	Tech. Assist	Total
80	25	780.9	52.0	835.2	37.6	564.3	87.0	0.0	35.3	2,392.3
81	17	845.6	5.0	65.0	0.0	225.9	124.9	0.0	56.6	1,323.0
82	21	106.8	176.6	698.5	0.0	708.2	395.3	0.0	45.8	2,131.2
83	15	665.0	38.8	256.0	44.4	680.8	29.6	0.0	40.4	1,755.0
84	24	1,124.0	178.2	493.0	0.0	540.2	238.7	0.0	75.3	2,649.4
85	19	335.5	0.0	360.0	0.0	1,546.1	0.0	0.0	68.7	2,250.3
86	26	379.8	618.2	284.8	0.0	803.8	77.6	500.0	122.7	2,786.9
87	24	547.0	214.4	561.8	0.0	1,310.8	0.0	0.0	62.9	2,691.9
88	15	365.6	33.4	262.7	44.5	759.3	0.0	300.0	59.9	1,825.4
80-88	186	5,145.2	1,316.6	3,757.0	126.5	7,139.4	953.1	800.0	567.6	19,805.4
$ share		26.0	6.6	19.0	0.6	36.0	4.8	4.0	2.9	100.0

FY80-86 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Transmission, Distribution & General	Rural Electrification	Technical Assistance	Total
							$ Millions			
FY80										
Kenya	Olkaria Geothermal	Drilling of production wells; construction of gathering system, 30 MW station (2 x 15 MW) and associated 132 kV transmission.	-	-	-	37.6	-	-	2.4	40.0
Madagascar	Andekaleka Hydro	Supplementary financing for FY79 project.	9.0	-	-	-	-	-	1.0	10.0
Sudan	Third Power	Installation of fifth 40 MW unit at Roseires hydro; transmission system reinforcement; installation of 40 MW of diesel and 60 MW of oil-fired steam (thermal financed by ODA).	45.0	-	-	-	13.6	-	6.4	65.0
Nigeria	Lagos Distribution	Expansion of 132 kV and 33 kV subtransmission system and Lagos distribution system including 300 MVA additional distribution transformer capacity.	-	-	-	-	97.0	-	3.0	100.0
Senegal	Power Engineering and Technical Assistance	Financing of organizational, account ing, planning and headquarters building design studies.	-	-	-	-	1.5	-	1.8	3.3
Fiji	Second Power	Increasing height of Monasavu dam (Power I) by 15 meters; construction of diversion works; installation of 2 x 20 MW additional capacity.	15.5	-	-	-	-	-	-	15.5
Indonesia	Ninth Power	Installation of second 400 MW unit at Suralaya and coal and ash facilities for units 1 and 2; construction of about 1,000 km of single circuit 500 kV transmission lines and 1,500 MVA of substation capacity for Java EHV network.	-	-	175.0	-	73.5	-	4.5	253.0
Korea	Gojeong Power	Construction of 1,000 MW (2 x 500) coal-fired station including coal handling facilities and 160 km of double circuit 345 kV transmission lines to Seoul.	-	-	114.2	-	-	-	0.8	115.0
Malaysia	Ninth Power	Construction of the Bersia and Kenering hydro projects totalling 192 MW capacity and associated transmission.	50.0	-	-	-	-	-	-	50.0
Thailand	Khao Laem Hydro	Construction of 300 MW (3 x 100 MW) peaking station and associated transmission.	79.9	-	-	-	-	-	0.1	80.0
Thailand	Second Rural Electrification	Electrification of 7,878 villages in 27 provinces.	-	-	-	-	-	74.0	1.0	75.0
India	Singrauli II Thermal	Installation of coal-fired 1,400 MW (2 x 200 plus 2 x 500) at Singrauli and associated 400 kV transmission.	-	-	297.0	-	-	-	3.0	300.0
India	Farakka Thermal	Installation of 400 MW (3 x 200 MW) and associated 400 kV transmission facilities at Farakka.	-	-	249.0	-	-	-	1.0	250.0
Pakistan	Third WAPDA Power	Extension of 220 kV, 132 kV and 66 kV transmission systems including additional substation capacity of about 4,800 MVA.	-	-	-	-	44.0	-	1.0	45.0
Sri Lanka	Sixth Power	General expansion of the 132 kV transmission system and distribution systems.	-	-	-	-	19.5	-	-	19.5
Egypt	Third Power	Increasing by 270 MW (4 x 67.5 MW) Aswan hydro capacity; installation of third 300 MW unit at Shoubrah El Khaima Thermal Station; expansion of distribution systems including 250 MVA additional transformer capacity.	57.0	52.0	-	-	9.0	9.0	-	127.0
Cyprus	Fifth Power	Expansion of the transmission and distribution system.	-	-	-	-	16.0	-	-	16.0

FY83-88 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

	Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Transmission, Distribution & General	Rural Electrification	Technical Assistance	Total
								$ Millions			
FY80 (Con't)											
	Turkey	Karakaya Hydro	Construction of the 1,800 MW (6 x 300 MW) Karakaya project on the Euphrates River and associated 400 kV transmission.	120.0	-	-	-	-	-	-	120.0
	Argentina/ Paraguay	Yacyreta Hydro	Construction of the 20-unit 2,700 MW Yacyreta hydro project on the Parana River and associated works.	208.5	-	-	-	-	-	1.5	210.0
	Brazil	CEEE Distribution	General expansion of 138 kV and 69 kV transmission systems and the distribution system including supply to 35,000 urban low income consumers and 12,000 rural consumers.	-	-	-	-	108.5	4.0	1.5	114.0
	Colombia	Bogota Distribution	General expansion of the 115 kV subtransmission and distribution systems to supply about 200,000 new consumers including 57,000 low income households.	-	-	-	-	85.5	-	1.5	87.0
	Colombia	Guadalupe Hydro	Construction of the 3-unit 213 MW Guadalupe station and expansion of the transmission and distribution systems.	71.0	-	-	-	52.8	-	1.2	125.0
	Honduras	El Cajon Hydro	Construction of a concrete arch dam, two 200 meter long pressure shafts, and 292 MW (4 x 73 MW) underground power station.	125.0	-	-	-	-	-	-	125.0
	Panama	Fifth Power	General expansion of the subtransmission and distribution systems.	-	-	-	-	22.8	-	0.2	23.0
	Uruguay	Fifth Power	General expansion of the subtransmission and distribution systems.	-	-	-	-	20.6	-	3.4	24.0
			FY80 total for 25 Projects	780.9	52.0	835.2	37.6	564.3	87.0	35.3	2,392.3
			% Share	32.6	2.2	34.9	1.6	23.6	3.6	1.5	100.0

FY80-88 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Transmission, Distribution & General	Rural Electrification	Technical Assistance	Total
							$ Millions			
FY81										
Swaziland	Power III	Construction of a 40 meter high rockfill dam and 20 MW hydro power.	9.8	-	-	-	-	-	0.2	10.0
Guinea	Power I	Rehabilitation and expansion of power distribution.	-	-	-	-	20.5	-	8.0	28.5
Ivory Coast	Power I	Provide electricity supply to the rural area.	-	-	-	-	-	29.4	3.6	33.0
Indonesia	Power X	Construction of 700 MW (4 x 175 MW) Saguling hydro facility, including construction of rockfill dam.	248.5	-	-	-	-	—	1.5	250.0
Thailand	Power Subsector Project	Financing of subprojects in EGAT's FY80/86 power development program: hydro and T & D.	80.0	-	-	-	19.6	-	0.4	100.0
Jordan	Power IV	Extension of urban distribution network and electrification of 50 villages.	-	-	-	-	15.2	9.0	0.8	25.0
Romania	Power IV	Financing of part of 1980/85 investment program consisting of hydro and thermal plants plus T&D.	60.0	-	65.0	-	-	-	-	125.0
Tunisia	Power III	Implementation of part of a 5-year Rural Electrification Program.	-	-	-	-	-	40.6	0.9	41.5
Yemen, Arab Republic	Power II	Expansion and connection of the distribution networks in 17 villages.	-	-	-	-	-	11.9	0.1	12.0
Barbados	Power I	Expansion of the existing transmission and distribution network.	-	-	-	-	4.9	-	1.1	6.0
Brazil	Second Power Transmission Project	Expansion of high voltage transmission facilities in Southern states.	-	-	-	-	123.0	-	2.0	125.0
Brazil	Electric Power System Coordination	Installation of a supervision and coordination center and provision for communication links between systems.	-	-	-	-	42.0	-	12.0	54.0
Guyana	Technical Assistance	Financing of optimization studies to help Guyana develop renewable energy sources.	-	-	-	-	0.7	-	7.3	8.0
Peru	Power Engineering	Feasibility studies to ensure timely preparation of of hydro and thermal power projects.	4.8	5.0	-	-	-	-	15.2	25.0
Colombia	Guavio Hydro	Construction of the Guavio hydro plant; a rockfill dam, plus tunnels, substations and transmission.	357.6	-	-	-	-	-	1.4	359.0
Colombia	Village Electrification	Rehabilitation of distribution networks plus providing electricity for 120 villages.	-	-	-	-	-	34.0	2.0	36.0
Colombia	Playas Hydro	Construction of a 65 meter earthfill dam; 200 MW underground power station plus transmission.	84.9	-	-	-	-	-	0.1	85.0
		FY81 Total for 17 Projects	845.6	5.0	65.0	-	225.9	124.9	56.6	1,323.0
		% Share	63.9	0.4	4.9	-	17.1	9.4	4.3	100.0

FY82-88 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Transmission, Distribution & General	Rural Electrification	Technical Assistance	Total
						$ Millions				
FY82										
Zaire	Shaba Power System Rehabilitation	Repair and replacement of parts and equipment in four generating stations and for the transmission network in the Shaba region.	12.0	-	-	-	-	-	7.0	19.0
Nigeria	Power VI	Interconnection of Ighin thermal power station with national 330 kV grid and with 132 kV Lagos subtransmission network; continuation of strengthening of the distribution network of 23 cities; management and consulting services for NEPA.	-	-	-	-	93.5	-	6.5	100.0
Sierra Leone	Technical Assistance	Rehabilitation of existing thermal generation and distribution facilities, improvement of power sector institutions and completion of preparation of Bumbuna hydro project (rehabilitation financed by OPEC).	0.6	-	-	-	-	-	4.4	5.0
Togo/Benin	Hydro Engineering Credit	Completion of design studies for Nangbeto hydroelectric scheme; preparation of tender documents and evaluation of bids; technical/management consulting services for CEB, CEET, and SBEE.	2.0	-	-	-	-	-	1.8	3.8
Indonesia	Power XI Transmission and Distribution	Distribution system for Jakarta, Bogor, Tangerang and Bekasi involving construction of overhead lines, underground cables and substations. Management/ consulting services.	-	-	-	-	169.0	-	1.0	170.0
Laos	Nam Ngum III Hydro	Installation of a fifth turbine-generator unit of 40 MW with associated equipment and facilities.	13.2	-	-	-	-	-	1.8	15.0
Malaysia	Rural Electrification I	Construction of 275 kV and 132 kV transmission lines and associated step-down transformer substations; construction of several mini-hydro-schemes and rural electrification.	26.0	-	-	-	16.3	44.0	-	86.3
Bangladesh	Ashuganj Thermal	Construction of a 300 MW (2 x 150 MW) steam power plant at Ashuganj with associated 230/132 kV substation and 48 km of 230 kV double circuit transmission line between Ashuganj and Chorasal.	-	92.0	-	-	-	-	-	92.0
Bangladesh	Rural Electrification	Installation of new distribution network and rehabilitation of existing distribution system in seven rural areas.	-	-	-	-	-	40.0	-	40.0
Burma	Power I	Construction of 414 km of 230 kV and 229 km of 132 kV single circuit lines, expansion and construction of stations, consulting/management services.	-	-	-	-	74.0	-	6.0	80.0
India	Korba II Thermal	Construction of 1,500 MW (3 x 500 MW) coal-fired steam units with 1,100 km of 400 kV transmission lines.	-	-	398.5	-	-	-	1.5	400.0
India	Ramagundam II Thermal	Construction of 1,500 MW (3 x 500 MW) coal-fired steam plants with associated 1,400 km of 400 kV transmission lines.	-	-	300.0	-	-	-	-	300.0
India	Rural Electrification III	Expenditure on 3,580 REC schemes and 110 system improvement schemes; construction of a Central Institute for Rural Electrification.	-	-	-	-	-	304.2	0.3	304.5
Sri Lanka	Mahaweli Transmission	Construction of 125 km of 220 kV double circuit and 38 km of 132 kV single circuit lines with associated substation; supply and installation of miscellaneous network equipment; training/ technical consulting services.	-	-	-	-	35.4	-	0.6	36.0

FY80-88 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

	Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Transmission, Distribution & General	Rural Electrification	Technical Assistance	Total
								$ Millions			
FY82 (Con't)											
	Sri Lanka	Power VIII Diesel	Construction of an 80 MW diesel power station at Sapugaskanda.	-	42.2	-	-	-	-	0.5	42.7
	Jordan	Aqaba Thermal	Construction of one water cooled steam power station at Aqaba consisting of two 130 MW heavy-oil-fueled generating units and accessories, associated transmission lines and consultancy services.	-	35.0	-	-	-	-	-	35.0
	Tonga, P.O.R.	Village Electrification	Construction of a 6.6 MW (3 x 2.2 MW) diesel station at Ao Shihr with associated network system to supply electricity to five towns and 13 villages; training/consultant services.	-	-	-	-	-	7.1	0.4	7.5
	Brazil	ELETROBRAS Distribution	Purchase and installation of subtransmission, substations and associated transformers, distribution and low voltage transmission lines including consumer connections and general service equipment.	-	-	-	-	182.7	-	-	182.7
	Ecuador	Transmission I	Integration of INECEL's subsidiaries and some municipal systems into the National Interconnected system through 230/138 transmission network and extension of services to 250,000 new customers.	-	-	-	-	93.1	-	6.9	100.0
	Jamaica	Power III	Rehabilitation of boilers and turbine generators, improvement of boiler-feed water treatment system and construction of 25 miles of 69 kV transmission line and substation.	-	7.4	-	-	19.0	-	4.1	30.5
	Peru	Power VI	Construction of Tarucmayo dam, implementation of Electrolima distribution program, feasibility studies and final designs of hydro power plants.	53.0	-	-	-	25.2	-	3.0	81.2
			FY82 Total for 21 Projects	106.8	176.6	698.5	-	788.2	395.3	45.8	2,131.2
			% Share	5.0	8.3	32.8	-	37.2	18.6	2.1	100.0

FY80-88 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

	Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Transmission, Distribution & General	Rural Electrification	Technical Assistance	Total
								$ Millions			
FY83											
	Botswana	Power I	Construction of coal-fired, pit-head, three by 30 MW steam generating station, 385 km, 220 and 132-kV transmission line, a system control center, consultant services, tariff and organization study and training.	-	-	32.2	-	-	-	0.3	32.5
	Kenya	Power IV - Olkaria - Third Unit	Extend the existing geothermal station and install a a 15-MW unit.	-	-	-	12.0	-	-	-	12.0
	Zimbabwe	Power I	Construct two 220 MW coal fired unit as an extension of a mine-side power station with 350 km of 330-kV transmission line to the grid, consulting services, a tariff structure and pricing study and training component.	-	-	99.0	-	-	-	6.0	105.0
	Mali	Power/Water	Plant rehabilitation, studies and technical assistance.	-	-	-	-	10.7	-	10.3	21.0 1/
	Indonesia	Power XII	Construct 110 MW of geothermal plant, 400 MW of coal fired plant, make distribution system improvements and design and construct 8 mini-hydro stations(6 x 750 kW and 2 x 200 kW), technical assistance and training.	3.6	-	95.7	32.4	164.1	-	4.2	300.0
	Indonesia	Power XIII--Cirata	Construction of a 1,500-MW hydroelectric project with associated 500-kV transmission line (500 MW to be installed initially).	279.0	-	-	-	-	-	-	279.0
	Thailand	Power XV--Provincial Power Distribution	Taking power supplies to about 1,500 villages now without supply, and amplifying the supply to 1,300 other villages, technical assistance in the fields of management systems, training and system development planning.	-	-	-	-	-	29.6	1.0	30.6
	India	Upper Indravati Power	Construction of a 600-MW hydropower station, four dams and eight dykes.	326.4	-	-	-	-	-	-	326.4
	India	Central Power Transmission	400-kV transmission lines interconnecting Northern, Eastern and Southern regional grids and strengthen link between Ramagundam and Southern grid.	-	-	-	-	250.7	-	-	250.7
	Portugal	Power VII	Support of time-slice of sector's 1985-85 investment program covering hydro, thermal, transmission and distribution works.	22.7	27.8	29.1	-	46.8	-	-	126.4
	Turkey	TEK Transmission III	Construction of some 1,500 km of 380-kV transmission lines and technical assistance components.	-	-	-	-	149.2	-	13.8	163.0
	Yemen Arab Republic	Power III	Construction of sub-transmission lines and distribution nets as well as rehabilitation of distribution systems, a constructions standards study and technical assistance in load research.	-	-	-	-	17.0	-	2.0	19.0
	Haiti	Power III	Install 14 MW of diesel plant, rehabilitate Port-au-Prince distribution net, study and prepare Ouaymouc I hydro scheme, build new head office, repair Peligre hydro plant, management and training components.	2.0	11.0	-	-	10.2	-	2.8	26.0
	Panama	Power IV - Fortuna Supplement	Supplemental loan to help finance cost increases mainly due to unforeseen geological conditions.	31.3	-	-	-	-	-	-	31.3
	Panama	Power VI - Distribution	Rehabilitation program for period 1984-86 of sub-transmission and distribution systems essential to further system growth and loss reduction.	-	-	-	-	32.1	-	-	32.1
			FY83 Total for 15 Projects	665.0	38.8	256.0	44.4	680.8	29.6	40.4	1,775.0
			% Share	37.9	2.2	14.6	2.5	38.8	1.7	2.3	100.0

1/ $3 million in addition were applied to water supply.

FY80-84 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Transmission, Distribution & General	Rural Electrification	Technical Assistance	Total
							$ Millions			
FY84										
Burundi/ Rwanda/Zaire in equal parts	Ruzizi II Regional Hydro	Construct a concrete dam and associated works, a powerhouse with two 13.5-MW units and provision for a third unit, connecting transmission works and a study of training needs.	39.8	-	-	-	-	-	5.2	45.0
Kenya	Kiambere Hydroelectric	Construct a rock and earthfill dam, 100m high, A 6.1 km intake tunnel, an underground powerhouse with two 70-MW generators, 80 km of 220 kV connecting transmission.	95.0	-	-	-	-	-		95.0
Rwanda	Power	Rehabilitate three 1.75-MW hydro units at Ntaruka power station, and the interconnecting transmission system, construct new transmission lines, provide maintenance equipment, spares and vehicles, consulting services and technical assistance.	1.8	-	-	-	6.5	-	0.7	9.0
Swaziland	Power III - Supplemental	Funds needed to finance additional civil works and consultants costs beyond the country's resources and needed to complete the project.	5.6	-	-	-	-	-	-	5.6
Tanzania	Power IV (Mtera)	Construct water intake from existing reservoir leading to underground powerhouse with two 40-MW generators and associated works construct a system control center at Dar-es-Salaam. Rehabilitate existing diesel power station. Train staff. Support consultant and studies.	28.4	4.7	-	-	1.0	-	0.7	35.0
Togo & Benin in equal parts	Nangbeto Hydroelectric	Construct a dam about 5 km long, a powerhouse with two 31.5 MW units, connecting 161 kV transmission line 110 km long, studies, technical assistance and training	24.2	-	-	-	-	-	5.8	30.0
China	Lubuge Hydroelectric	Construction of a rockfill dam and power house with 3 x 150-MW generators, provision for a future fourth unit, 313 km of connecting, 220-kV transmission, consulting services and a training program.	117.2	-	-	-	16.2	-	12.0	145.4
Malaysia	Eleventh Power	Construct transmission at 275-kV and 132-kV with associated substations, expand distribution systems of six states, provide a training simulator for thermal powerstation operation, computing equipment for accounting functions, and consultancy services.	-	-	-	-	61.8	-	8.2	70.0
Indonesia	Power XIV	Construct two 400-MW coal-fired thermal units Suralaya Power Station, extend distribution systems and provide consultancy services.	-	-	150.0	-	46.6	-	4.4	210.0
India	Nathpa Hydroelectric	Construct a combined gravity rockfill dam, powerhouse with four 125-MW water turbine sets, connecting transmission, rehabilitate thermal generating plant, expand and modernize data processing facilities, support consulting and training costs.	264.3	-	33.2	-	-	-	2.9	300.4
India	Farakka II Thermal	Extend the existing coal thermal plant by two 500-MW units with provision for a future 500-MW unit, connecting transmission of about 640 km, and consultancy services.	-	-	300.8	-	-	-	-	300.8
India	Fourth Trombay Thermal	Add Unit No. 4 of 500 MW (furnace capable of burning coal), connecting transmission.	-	135.4	-	-	-	-	-	135.4
Nepal	Karnali Preparation-Phase I	Prepare the feasibility study of the Karnali multipurpose project which embraces a 3600-MW hydropower scheme, prepare a prefeasibility study of a smaller hydroproject upstream the main project. Support consultancy services to Government of Nepal.	-	-	-	-	-	-	11.0	11.0

FY80-86 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Transmission, Distribution & General	Rural Electrification	Technical Assistance	Total
							$ Millions			
FY86 (Con't)										
Nepal	Marsyangdi Hydroelectric	Construct a run-of-river scheme with diversion weir, 7.1-km headrace tunnel, semi-underground power house with three 23-MW generators, connecting transmission at 132 kV, extension of Kathmandu distribution, and consulting/technical assistance services.	186.7	-	-	-	-	-	2.3	187.0
Egypt	El Kholma & Aswan II Supplemental	Support the civil works costs and engineering of Aswan II, plant costs of El Kholma, and technical assistance.	17.2	30.1	-	-	-	-	3.7	39.0
Jordan	Energy Development	The project has five components: A) Petroleum exploration, B) Expansion and rehabilitation of urban networks of JEPCO and IRBID and electrification of 75 villages, C) Energy conservation using equipment and consultants for energy audits of selected industries and training, D) Renewable energy using equipment and consultants for evaluation of resources and construction of demonstration systems and training, E) Energy planning using equipment and consultants in conducting of detailed studies and the training of staff in these matters.	-	-	-	-	12.0	10.5	7.5	30.0
Tunisia	Power IV	Supports rural electrification, urban rehabilitation and tools, vehicles, training.	-	-	-	-	26.9	11.2	0.6	38.7
Yugoslavia	Middle Horatco Hydro - Supplemental	Construction of Part B of Project, i.e., Water regulating dam and power station with three 25-MW generators.	61.0	-	-	-	-	-	-	61.0
Yugoslavia	Transmission III	Provide computerized system control systems in each Republic and nationwide integration by UNIPEL. A training component is also supported.	-	-	-	-	117.5	-	2.5	120.0
Brazil	Electrobras II Distribution	Supports the 1983-88 investment programs of seven utility companies for the installation of subtransmission distribution, substation and consumer connection works as well as rehabilitation of generation plant for two of the utilities.	-	-	-	-	250.6	-	-	250.6
Brazil	Rural Electrification	Supports a study leading to proposal concerning the institutions, policy, financing and technical aspects of rural electrification. The execution of the 1986-87 R.E. programs in the Parana and Minas G...ais regions. Training programs for CEMIG and COPEL.	-	-	-	-	-	217.0	5.8	222.8
Colombia	Power Development Finance	Support for the 1984-85 investment programs of ISA, EEEB, EPM and CVC.	198.2	-	-	-	-	-	-	198.2
Colombia	Rio Grande Multipurpose	Construct an earth dam and two hydro-power stations called Tasajara and Miquis drawing water from the same reservoir. Tasajara has three 100-MW generators and Miquis has initially one 22.5-MW generator. Associated transmission, consulting services, training and data processing facilities are also included. Water supply facilities account for one quarter of the total project cost.	162.9	-	-	-	-	-	1.6	164.5
St. Vincent & Grenadines	Power I	Construct three hydropower plants on Cumberland River having a total capacity of 3.4-MW, eight steam gauging stations, rehabilitate three diesel units at Cane Hall and four at Kingstown, refurbish sub-transmission and distribution, metering, service lines and street lights purchase vehicles and achieve loss reduction.	3.5	-	-	-	1.1	-	0.4	5.0
		FY86 Total for 24 Projects	1,126.0	178.2	493.0	-	540.2	238.7	75.3	2,649.4
		% Share	42.5	6.7	18.6	-	20.4	9.0	2.8	100.0

FY80-88 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Transmission, Distribution & General	Rural Electrification	Technical Assistance	Total
							$ Millions			
FY83										
Burundi	Transmission & Distribution	Construction of 110 kV transmission line (83 km) from Ruzizi II to Bubanza, 110/30 kV substations in Bubanza and Cibitoke, two 30 kV subtransmission lines (42 km) to supply four regional towns, a 15 or 30 kV feeder to Ketumba and distribution networks in these towns, and discribution networks to consumers to six low-income districts of Bujumbura. Provide for management assistance to REGIDESO and technical assistance for the training of REGIDESO staff. Establishment of training center. Continuation of the dissemination program of improved charcoal stoves in Bujumbura and funding for the services of an advisor on petroleum matters.	-	-	-	-	9.1	-	3.2	12.3
Uganda	Power II	The project has four components: (i) rehabilitation of the Owen Falls power station; (ii) rehabilitation of the Transmission and Distribution Network; (iii) provision of vehicles, tools and equipment for maintenance and repair services. Rehabilitation of UEB's Staff Training Center and UEB's operational buildings and staff housing and implementation of a training study. Engineering and consulting services for construction supervision would also be provided, and (iv) include studies of UEB's tariff structure and level and billing and collection system and the provision of a computer for UEB. Also,technical assistance for the new Energy Department on a forest and fuelwood plantation inventory, on fuelwood marketing, and on a household energy survey in major towns.	6.0	-	-	-	18.3	-	4.5	28.8
Guinea	Power Engineering II	Continuation of the efforts begun under Power I. Extension of ongoing training and technical assistance to improve EDG's operation. Provide for a power sector institution/organization study, a power planning study, a feasibility study and detailed engineering for the power plant, and a study for the rehabilitation and extension of the subtransmission and distribution systems. Provide for spare parts, equipment and materials, and a warehouse for EDG, and technical assistance, training and equipment to improve EDG's operations.	-	-	-	-	2.5	-	5.5	8.0
Niger	Power	Provide for a power planning study; a study of future sector organization; a study of NIGELEC's internal organization, management, and manpower requirements; training of NIGELEC engineers and technicians; a study of NIGELEC's tariff based on long-run marginal cost principles; and equipment to rehabilitate and improve the operational efficiency of part of NIGELEC's distribution system.	-	-	-	-	2.3	-	5.2	7.5
China	Power II	Construction of a 500 kV transmission line of about 643 km from Kaohou to Shanghai, including the 3 km crossing over the Yangtze River. Installation of five substations at Kaohou, Jiangdu, Sunan, Huangdu and Wanqiao, and provision of equipment for three other substations in JPEPB's grid. Provision of tele-control and tele-communication equipment at project substations and the dispatching centers at Shanghai and Nanjing for load dispatching and system control. Provision of equipment for installation, commissioning and testing of substation facilities. Provision of consultancy services to assist ECEPDI and JPEPB in design, procurement, construction and staff training for the 500 kV transmission lines and substations. Establishment of a training center and provision of equipment to two existing electrical training schools for the operation and maintenance of 500 kV transmission lines and substations.	-	-	-	-	113.1	-	3.9	117.0

FY80-88 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

	Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Transmission, Distribution & General	Rural Electrification	Technical Assistance	Total
								$ Millions			
FY85 (Con't)											
	Indonesia	Saguling Hydroelectric	Supplemental loan for the Tenth Power Project (FY81) for cost overruns due to geological and geotechnical problems.	50.0	-	-	-	-	-	-	50.0
	India	Kerala Power	Construction of a powerhouse housing three generating units each of 60-MW capacity. Construction and installation of about 415 km of 220-kV double circuit transmission lines, additional transmission substations of 1,180-MVA capacity, 760 MVAR of reactive power compensation devices, additional distribution substations (110-kV, 11-kV) of 370 MVA capacity, and the associated distribution cables and lines, switching stations and distribution transformers.	63.2	-	-	-	108.7	-	4.1	176.0
	India	Chandrapur Thermal	Installation of two 500 MW generating units. Rehabilitation of MSEB's thermal stations.	-	-	300.0	-	-	-	-	300.0
	India	Rihand Power Transmission	Installation of about 910 km of 500-kV DC power transmission line between Rihand and Delhi, and the associated converting stations, together with about 1,450 km of 400-kV AC lines connecting Singrauli-Rihand with the main load centers at Kanpur, Delhi, Panipat and Jaipur and related substations in the Northern Region. Introduce HVDC power transmission technology.	-	-	-	-	245.0	-	5.0	250.0
	Pakistan	WAPDA IV (Power Transmission)	Erection of about 3,815 km of transmission lines. Construction of 139 new substations. Extension and reinforcement of another 86 existing substations. Provide for studies, training and technical assistance to prepare an investment program for reducing losses in the transmission network and a program of action to improve power plant efficiency, to strengthen WAPDA's accounting capabilities and modernize its internal audit system, and to formulate a national least-cost plan for the power subsector.	-	-	-	-	100.0	-	-	100.0
	Pakistan	WAPDA V (Power Transmission)	Installation of about 1,100 km of 500-kV transmission lines and of two new 500/220-kV substations. Extension of four existing 500/220-kV substations. Provide for consulting services for (i) the collection, storage and retrieval of data on the power system, (ii) a load research and management study, and (iii) a feasibility study and detailed engineering for a power station complex based on mainly imported coal to be located in the vicinity of Karachi.	-	-	-	-	98.0	-	2.0	100.0
	Turkey	TEK Transmission IV	Construction of about 800 km of 380-kV transmission lines to interconnect Altinkaya and Hamitabat power stations under construction to TEK's bulk supply system. Provide for two additional links for Karakaya power station. Construction and/or extension and placing into operation of 380/154 kV transformer substations with total installed capacity of about 2,100 MVA. Supply, install and commission equipment for the construction and/or extension of 154/35 kV substations with about 3,300 MVA of new installed capacity. Construct tower testing station. Supply specialized line stringing equipment and vehicles to be used in transmission lines construction. Training and supply of devices. Provide for consulting services to assist TEK.	-	-	-	-	140.3	-	1.7	142.0

FY80-88 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Transmission, Distribution & General	Rural Electrification	Technical Assistance	Total
						$ Millions				
FY85 (Con't)										
Yugoslavia	Visegrad Hydro	Construction of a concrete gravity dam on the Drina River to form a reservoir with a storage capacity of about 160 million m^3 and 6.5 km^2 surface area, a power house with three 105-MW hydro turbine-generator units. Construction of a 400-kV step-up transformer bank (315 MW) to connect the power plant to the interconnected power grid by a 400-kV transmission line (5.4 km). Relocation of 40 kms of roads and resettlement of about 225 families. Consultancy services for construction supervision, a training program for the staff of the borrower and HED in financial management to set up an adequate management information system, and a panel of experts to advise on civil works.	125.0	-	-	-	-	-	-	125.0
Brazil	Power Transmission CHESF-FURNAS	CHESF: Construction of about 940 circuit-kms of 500-kV and 230-kV transmission lines. Installation of 1,900 MVA of transformer capacity and about 1,070 MVAR of compensating capacity and substation ancillary equipment at ten substations. FURNAS: Construction of about 790 circuit-kms of transmission lines at 500-kV and 345-kV. Installation of about 4,700 MVA of transformer capacity and about 710 MVAR of compensating capacity and other substation ancillary equipment at 13 substations. Training programs implementation for both CHESF and FURNAS staff.	-	-	-	-	386.2	-	13.8	400.0
Brazil	Southeast Power Distribution	ELETROPAULO: Construction of about 20,000 conductor-kms of subtransmission and distribution lines, and 6,800 MVA of distribution substations. Installation of about 1,400 MVA of distribution transformers and related ancillary equipment. LIGHT: Construction of about 13,500 conductor-kms of subtransmission and distribution lines and 830 MVA of distribution substations. Connection of about 230,000 consumers and related ancillary equipment. CPFL: Construction of about 5,300 circuit-kms of subtransmission and distribution lines and 1,000 MVA of distribution substations. Installation of about 142 MVA of distribution transformers and related ancillary equipment. Training programs implementation for ELETROPAULO, LIGHT and CPFL. ELETROBRAS handles the execution with provided management and consulting services.	-	-	-	-	304.9	-	7.1	312.0
Guatemala	Chixoy Power II	Supplemental loan for the Chixoy Hydroelectric Power Project (FY78).	44.6	-	-	-	-	-	-	44.6
Haiti	Power IV	Installation of two diesel-electric units (2x7.8 MW) at the Carrefour plant which is financed by CCCE. Implementation of a program to improve the generation capacity of the three existing power plants. Preparation of detailed engineering design for a hydroelectric project in the Artibonite river basin. Provision of consulting services for the management and operation of EdH, as well as project implementation and operation. Provision of a training program including fellowships. Completion of the distribution network renovation for Port-au-Prince. Consulting services to review municipal finance of Port-au-Prince.	-	-	-	-	14.7	-	7.4	22.1

FY80-85 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

	Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Transmission, Distribution & General	Rural Electrification	Technical Assistance	Total
								$ Millions			
FY85 (Con't)											
	Panama	Power VII	Raise the height of existing dam of the Fortuna Project to increase the project's generating capacity by 247 GWh per year. Complete feasibility studies for two medium-size hydroelectric projects for future construction to meet demand growth. Asset revaluation study.	46.7	-	-	-	-		4.3	51.0
	Uruguay	Power Engineering	Provide for distribution system and operation planning studies. Consultant services for the feasibility study of the rehabilitation of the Gabriel Terra Hydroplant. Provide for a training program for managerial level officers. Implementation of a revised tariff structure by installing electricity meters. Purchase of instruments and materials for distribution system maintenance and monitoring the safety of the Gabriel Terra Dam.	-	-	-	-	3.0	-	1.0	4.0
	..		FY85 Total for 19 Projects	335.5	-	300.0	-	1,546.1	-	68.7	2,250.3
			% Share	14.9	-	13.3	-	68.7	-	3.1	100.0

FY80-88 WORLD BANK GROUP LENDING ON ELECTRIC POWER

Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Transmission, Distribution & General	Rural Electrification	Power Sector	Technical Assistance	Total
							$ Millions				
FY86											
Ethiopia	Energy	Rehabilitation of hydro, diesel and steam generating plant and provision of spare parts. Construction of 345 Km, 230 kV transmission line from Dire to Dire Dawa. Construction and expansion of substations at 230, 132, 66 and 45 kV. Construction and rehabilitation of distribution works. Provide housing and transportation for the operations staff. Provide technical assistance in the fields of organization, training, planning, operation, maintenance and finance. Support pilot energy projects in the fields of biomass briquetting, charcoal production, cook stoves. Studies of petroleum supply options, LPG production, and industrial efficiency.	2.6	1.9	-	-	37.9	-	-	19.6	62.0
Sudan	Power Rehabilitation	Add two 10-MW diesel sets in the Burri station, rehabilitate two units at the Roseires hydro plant, procure spare parts for the Sennar hydro station rehabilitate transmission lines and substations, and provide consultancy services for system development and investment priorities.	2.0	14.6	-	-	7.3	-	-	5.9	60.0
Tanzania	Power Rehabilitation Energy	Rehabilitate diesel and combustion turbine plant, 220, 132 and 66-kV transmission systems, distribution systems at 33 and 11 kV, supply 50,000 electricity meters and sealing equipment, supply communications equipment and install, supply 285 vehicles and spares for one year's usage at completion of project, tools and equipment for meter testing, vehicle repair and communications equipment maintenance. Employ 12 engineers/technicians for supervision, rehabilitation work and training. Provide technical assistance for design, finance, use of electric cookers, and two pilot charcoal production schemes.	-	1.8	-	-	29.9	-	-	8.3	40.0
Zaire	Power II	Rehabilitate hydro plant, transmission and distribution systems and provide communications systems, technical assistance in the fields of management and training.	9.6	-	-	-	17.8	-	-	9.6	37.0
Ghana	Power	Rehabilitate diesel plant, install new, and extend existing distribution systems, provide new vehicles and spares. Provide housing and office equipment. Provide technical assistance in the fields of sector organization and legislation. Conduct studies in the fields of hydro operation, distribution planning, market and system development, generation planning and tariffs.	1.4	2.1	-	-	21.4	-	-	2.9	28.0
Senegal	Energy Sector	Install two 20-MW diesel sets, rehabilitate and construct transmission and distribution lines. Provide technical assistance in the fields of engineering, energy conservation, training and petroleum supply, refining and distribution.	-	11.4	-	-	7.1	-	-	1.5	20.0
China	Power III Beilungang	Construct a coal thermal plant with two 600-MW units and the associated 500-kV transmission lines. Support training, design, procurement, and project management services. Make a tariff study of the East China system.	-	-	196.7	-	26.2	-	-	2.1	225.0
China	Power IV Yantan Hydro	Construct a hydro power plant with four 275-MW units, a 110-m concrete gravity dam and associated 500-kV transmission system. Support construction management services, training in the field of planning, finance and accounting.	51.0	-	-	-	-	-	-	1.0	52.0

FY80-88 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

	Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Transmission, Distribution & General	Rural Electrification	Power Sector	Technical Assistance	Total
								$ Millions				
FY86 (Cont'd)												
	Korea	Energy Second Power	Support transmission and distribution works needed in the period 1986-1989. Provide technical assistance.	-	-	-	-	228.0	-	-	2.0	230.0
	Papua New Guinea	Yonki Dam (Power III)	Construct an earth-fill dam, 60 m high, instal two 15-MW hydro turbine units in the existing Ramu 1 station. Support consultants for engineering design, training and technical assistance. Support rural electrification in neighborhood of project and define future rural electrification strategy.	18.9	-	-	-	-	3.0	-	6.6	28.5
	Bangladesh	Rural Electrification II	Construct some 5,700 km of 33-kV and 11-kV distribution and 2,900 km at 400/230 V, associated substation, services and meters. Supply vehicles, tools and equipment. Rehabilitate existing systems at the same voltage levels. Support consulting service for construction and technical assistance.	-	-	-	-	-	73.6	-	5.4	79.0
	Bangladesh	Power Transmission and Distribution	Extend the 132-kV transmission system. Extend and reinforce the distribution system. Provide metering equipment to support a loss reduction program. Provide support for design and construction supervision, improved commercial and financial functions, planning and loss reduction programs, tariff studies and training.	-	-	-	-	51.7	-	-	4.3	56.0
	India	Combined Cycle Power	Construct combined-cycle plant in three stations having a total capacity of 1500 MW, the associated transmission lines, and provide technical assistance for the engineering, testing and commissioning of the plant.	-	479.8	-	-	-	-	-	5.2	485.0
	Pakistan	Kot Addu (GENPRA VI)	Convert an existing combustion turbine station to combined cycle operation by installing heat recovery boilers and two 100-MW turbogenerators. Construct associated transmission lines and provide consultancy services.	-	88.0	-	-	-	-	-	2.0	90.0
	Hungary	Power I	Reconstruct and rehabilitate thermal plant and provide technical assistance in operations.	-	-	61.2	-	-	-	-	2.8	64.0
	Jordan	Power VI - Distribution	Rehabilitate urban distribution, supply 95 villages, supply consulting services, supply computer systems and training, and technical assistance in managerial and technical fields.	-	-	-	-	24.9	-	-	2.6	27.5
	Turkey	Elbistan O&M Assistance	Completion of construction of units 3 & 4 at Elbistan and provision of project management and operation assistance.	-	-	10.0	-	-	-	-	-	10.0
	Turkey	Power System Operations Assistance	Supply tools, transport, instruments, spares, and materials for the rehabilitation, maintenance, and operation of the system as a whole. Supply telecontrol, reactive power compensation equipment, hot-line working tools. Support training, studies of hydro-efficiency improvement potential and the feasibility of a 1,000-MW combined-cycle plant at Thrace.	3.0	-	16.9	-	113.5	-	-	6.6	140.0
	Turkey	Kayraktepe Hydro	Construct a rockfill dam and power plant with two 200-MW units and associated works. Support a study of Turkey's hydro resources and develop a systematic inventory with associated development costs.	246.1	-	-	-	-	-	-	5.9	252.0

FY80-85 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Transmission, Distribution & General	Rural Electrification	Power Sector	Technical Assistance	Total
							$ Millions				
FY84 (Con't)											
Yemen Arab Republic	Power IV	Extend the distribution system including the customer service and meter. Provide consulting services for design, supervision, training and the implementation of the financial recovery plan. Construct a meter testing laboratory.	-	-	-	-	9.4	-	-	2.3	11.7
Brazil	Electric Power Sector I-A	Support of the power sector investment needs in the period 1984-1989 for all aspects of the system.	-	-	-		-	-	500.0	-	500.0
Colombia	Bogota Distribution II-A	Support of the extension and improvement of the sub-transmission and distribution system in the Bogota area. Provision of hot-line working equipment, maintenance and testing equipment. Consultancy services in the field of loss reduction, system reliability and operation, training and management practices.	-	-	-	-	167.2	-		3.8	171.0
Ecuador	Power Sector Improvement-A	Support the power sector's operational and institutional development by the supply of equipment and vehicles and the finance of consultancy services in the fields of organization, tariffs, operational management, and training.	-	-	-	-	2.9	-	-	5.6	8.5
Guatemala	Power V-A	Expand and improve the distribution system, and extend to rural consumers. Provide vehicles and equipment. Support studies for hydro development, thermal plant rehabilitation, and training. Support the construction of a national control center, data processing facilities, and the equipment of an electronics laboratory and repair facility.	-	48.2	-	-	50.1	1.0	-	11.7	31.0
Peru	Power Engineering II-A	Provide support for the regional managements of the power sector, their operation and maintenance. Supply equipment for communications, data processing, transportation and laboratory services.		-	-	-	8.5	-	-	5.0	13.5
Uruguay	Power Plant Rehabilitation-A	Rehabilitate the Terra Hydro plant. Extend the 500-kV and 150-kV transmission systems. Improve the 30-kV underground system of Montevideo. Support consulting services for the project.	45.2	-	-	-	-	-	-	-	45.2
		FY84 Total for 26 Projects	379.8	618.2	284.8	-	803.8	77.6	500.0	122.7	2,786.9
		% Share	13.6	22.2	10.2	-	28.8	2.8	18.0	4.4	100.0

FY80-88 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Transmission, Distribution & General	Rural Electrification	Power Sector	Technical Assistance	Total
						$ Millions					
FY87											
Madagascar	Energy I	Rehabilitate power system, expand capacity and improve maintenance and operating practices. Supply plant and equipment to support. Provide technical assistance to develop system planning, operation and management skills.	4.6	6.0	-	-	7.4	-	-	7.0	25.0
Sudan	Power IV	Installation of two oil fired steam turbo generators of between 45-MW and 60-MW capacity in existing station. Technical assistance and training of staff. Environmental study of Khartoum area. Study of load characteristics and losses. Technical assistance for load planning and institutional development.	-	30.2	-	-	-	-	-	1.8	30.0
Ghana	Northern Grid	Construct transmission and distribution lines and their associated substations. Support consultancy services and training.	-	-	-	-	6.3	-	-	-	6.3
China	Shuikou Hydroelectric	Construction of a concrete gravity dam and power station with seven 290-MW turbines and associated works. Construction of a 500-kV transmission line 560 km long to Hangzhou. Resettlement of 69,000 people. Consulting services for the design and construction of the hydro works, and for the power system operation and control and training.	124.8	-	-	-	13.8	-	-	1.4	140.0
China	Wujing Thermal Power	Extend Wujing station by two 300-MW coal-steam generating units and associated transmission line. Provide load dispatch center with on-line computer aided control system. Develop master plan for Shanghai distribution system. Enhance training skills and provide equipment for training schools.	-	-	186.8	-	-	-	-	3.2	190.0
Indonesia	Transmission and Distribution	Construction of transmission lines, distribution lines and a testing and research facility. Consulting services for efficiency improvement, design of a steam power plant and development of an Engineering Services Center.	-	-	-	-	212.0	-	-	14.0	226.0
Lao	Southern Provices Electrification	Provide interconnection with the Thailand grid; extend both rural and urban power systems in the southern provinces. Execute pre-feasibility studies of the hydro power development options and extend to project preparation of the best option. Provide technical assistance in management and operations, and supply communications, metering and loss reduction equipment.	-	-	-	-	22.0	-	-	3.8	25.8
Malaysia	Energy Efficiency and Plant Rehabilitation	Rehabilitate fifteen thermal units having an aggregate capacity of 1290 MW. Convert 840 MW of oil fired generation to oil/gas firing capability. Introduce computerized maintenance management systems for power plants. Modernize the national load dispatch center and instal three regional centers. Extend the transmission and substation capacity for operating efficiency. Provide technical assistance in management, operation and training skills.	-	27.8	-	-	68.2	-	-	4.0	100.0

Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Transmission, Distribution & General	Rural Electrification	Power Sector	Technical Assistance	Total
						$ Millions					
FY82 (Con't)											
Western Samoa	Afulilo Hydroelectric	Construct dam and power house for a 4-MW hydro generator and associated transmission works. Provide consultancy and technical supervision during project execution.	3.0	-	-	-		-	-	-	3.0
Jordan	Rovench Power	Add at the Aqaba station, two 130-MW oil fired steam generating units designed for coal firing also. Upgrade Aqaba and Amman-South substations to 400 kV.	-	70.0	-	-	-	-	-	-	70.0
Turkey	Sir Hydropower	Construction of a dam, powerhouse and ancillary work to drive three 94.5-MW generators. Transmission and related works to connect to the system and distribute to the users. Technical assistance for the improved utilization of existing CEAS assets. Relocation and rehabilitation of 7000 people	96.0	-	-	-	34.2	-	-	1.8	132.0
Turkey	Energy Sector Adjustment	In support of energy planning, training, computer hard and software, transmission equipment, energy audits in the sector as a whole including petroleum and coal/lignite	-	-	-	-	-	-	325.0	-	325.0
India	National Capital Power Supply - Phase I	Extend distribution, effect loss reduction, instal meters and capacitors, train staff in design, construction, operation and maintenance.	-	-	-	-	485.0	-	-	-	485.0
India	Talcher Thermal Power	Construct powerstation with two 500-MW coal/steam generators being the first of three stages of 1000 MW each.	-	-	375.0	-	-	-	-	-	375.0
India	Karnataka Power	Develop Kodasalli hydro with three 40-MW units and Kadra site with three 50-MW units. Resettle and rehabilitate population, and plant compensatory forest area. Develop computerized management tools. Construct transmission systems. Provide consultancy services for design, construction and system development planning.	217.6	-	-	-	112.4	-	-	-	330.0
Pakistan	WAPDA VII Power Plant Efficiency	Equipment, spares, tools for rehabilitation of steam plant, combustion turbines and conversion of combustion turbines to combined cycle operation. Provide consultancy services and training in operations and maintenance	-	70.0	-	-	-	-	-	-	70.0
Sri Lanka	Distribution Expansion and Rehabilitation	Extension and rehabilitation of distribution mains both overhead and underground; including provision of vehicles, tools and instruments. Technical assistance in the design, maintenance and operation of distribution systems and expansion planning.	-	-	-	-	46.5	-	-	5.5	52.0

FY80-88 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Transmission, Distribution & General	Rural Electrification	Power Sector	Technical Assistance	Total
						$ Millions					
FY87 (Con't)											
Argentina	Power Engineering	Studies into the sector's legal and organizational environment, the quality of service and impact of investment restrictions, methods of investment planning to meet power demand most economically, operational planning of maintenance and materials supply, data collection on load patterns and end use practices to assist in demand forecasting, and training programs both local and abroad. Supply equipment to facilitate and process the studies and their application.	-	-	-	-	-	-	-	14.0	14.0
Argentina	Seghe V-A	Reduce system losses and start data collection. Rehabilitate transmission and distribution and extend system. Support training.	-	-	-	-	276.0	-	-	-	276.0
Belize	Power Development	Instal one new diesel generator at each of three sites and relocate two units at a new site to be developed under this project. Develop the distribution system and extend supplies to the customers in the areas covered. Provide vehicles and equipment for the operation and maintenance of the system. Provide engineering and consultancy services for the project and an organizational review of the utility.	-	3.1	-	-	0.5	-	-	3.7	7.5
Bolivia	Power Rehabilitation	Provide parts and equipment for the maintenance program; mostly generation. Extend and modify transmission substations to suit system needs. Prepare system development plan. Provide engineering and consultancy services for project execution, financial management and development of a management information system with appropriate computer hard and software followed by implementation.	-	1.1	-	-	4.5	-	-	1.2	6.8
Chile	Pehuenche-A	Construct hydro plant of 500-MW capacity. Train staff in the construction and operation of the plant and in the protection of the environment.	95.0	-	-	-	-	-	-	-	95.0
Chile	Alto Jahuel-Polpaico-A	Construct transmission works and train staff in their operation.	-	-	-	-	21.5	-	-	-	21.5
Dominica	Power	Increase the utilization of existing hydro potential by incremental reconstruction and extension of existing works. Reconductor and extend the distribution system where needed and instal capacitors, transformers and meters for supply improvement and loss reduction. Provide vehicles and equipment for the operation and maintenance of the system. Provide training and equipment to enhance the skills of the management and operations staff. Provide consulting services for the implementation of all aspects of the project.	1.0	-	-	-	0.5	-	-	1.5	3.0
		FY87 Total for 24 Projects	542.0	214.4	561.8	0.0	1,310.8	0.0	0.0	62.9	2,691.9
		% Share	20.1	8.0	20.9	0.0	48.7	0.0	0.0	2.3	100.0

FY88-89 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

Region	Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Power Transmission, Distribution & General	Power Sector	Technical Assistance	Total
FY88							$ Millions				
Africa	Somalia	Power Rehabilitation and Energy Project 350EP2051	Power component: Gezira and Centrale diesel station rehabilitation, installation of heavy fuel oil burning diesel and steam units, transmission and distribution rehabilitation and expansion, miscellaneous vehicles, tools and equipment. Provide management, consultancy and training support. Institutional component: consultants for project management, executive staff with Somali counterparts for project management, finance, generation operation, maintenance and rehabilitation, technical assistance in recruitment of these consultants. Energy components: provide an energy advisor and specialist support staff, and technical assistance.		3.9			8.6		0.0	12.5
	Zimbabwe	Power II 331EP2020	Rehabilitate Kariba South generators, rehabilitate and extend transmission and distribution system, provide equipment, spares, materials, workshops and vehicles, support manpower development, establish a management information system, provide technical assistance in engineering, project execution, and system operation.					27.6		16.4	44.0
Asia											
	Thailand	Power Transmission Project 47THLP0006	Develop transmission system and control facilities. Support design and project supervision.					110.0			110.0
	Malaysia	Sarawak Power 48MYP0103	Construct two 30-MW combustion turbines as first stage of 90-MW combined cycle plant, construct transmission and associated substations, develop a dispatch center, provide technical assistance in design, accounting and planning.		29.5			26.2		0.3	56.0
	Nepal	3rd Technical Assistance Panchesmar 48NEP0077	Develop feasibility study for join development with India of the Panchesmar hydro project, support detailed engineering of 402-MW Arun-3 hydro project, sociological and environmental studies for both hydro projects, develop a master system development plan and power pricing study with implementation plan.	9.4						5.0	14.4
	China	Beilungang Thermal Power Extension 48CHP0147	Add a second coal-fired, 600-MW steam set and associated transmission line. Technical assistance in management, extension and improvement of [illegible]			164.1				0.9	165.0

FY80-88 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

Region	Country	Project	Description	Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Power Transmission, Distribution & General	Power Sector	Technical Assistance	Total
FY80 cont'd.				----------	----------	----------	$ Millions	----------	----------	----------	----------
	India	Second Karnataka Power 41IBRD1816	Construct 240-MW hydro power scheme, transmission lines at 400 and 220 kV, sub-transmission at 66 kV and 11 kV and distribution. Provide system control facilities and computers, tools and equipment, and consultancy services.	120.0				120.0		1.0	200.0
	India	Uttar Pradesh Power 41IBRD1935	Construct a 300-MW hydro station, support resettlement of population, compensatory afforestation, install two fluidized-bed boilers, modernize coal and ash handling plant, construct transmission lines and substations, install some 2000 electricity meters, support consulting services, training, and organizational improvement.	223.9		60.1		64.4		1.6	350.0
	Sri Lanka	Power Distribution and Transmission 4SRIP1862	Rehabilitate, extend and reinforce transmission and distribution systems, support technical assistance in the fields of billing, management information, bidding and contract documents, tariff studies, training middle managers and technical staff, consumer relations and utility organization. Support a feasibility study for a multipurpose hydro scheme.	3.5				32.1		4.9	40.5
	Philippines	Bacon Manito Geothermal 4PHLP1140	Develope wells and steam gathering system in Bacon Manito field, install 2x55 MW steam units and 32 KM of connecting double circuit 230 kV transmission facilities and communication links, and consulting services.				44.5	52.5		3	100.0
EMENA											
	Morocco	Power Distribution Project 5MOCP1000	Construction, extension, rehabilitation and reinforcement of the distribution systems of ONE and the Regies. Construction of Warehouses, offices, training centers and housing. Provision of equipment, materials and spares. Provide management assistance and advice.					89.1		0.9	90.0
	Algeria	Third power (220 KV - -Transmission) 5ALGP1033	Construct 475 KM of 220-KV Transmission lines to connect new Jijel power station and strengthen system plus 2100 MVA of 220 KV stepdown substation vehicles and consulting services.					153.5		6.5	160.0
LAC											
	Colombia	Power Sector Adjustment 0COLP0110	External resource transfer to help Government redirect public investment away from capital intensive sectors, enhance domestic resource mobilization, and improve management of public						300.0		300.0

FY80-88 WORLD BANK GROUP LENDING FOR ELECTRIC POWER

Region	Country	Project	Description		Hydro & Associated Transmission	Oil/Gas Thermal & Associated Transmission	Coal Thermal & Associated Transmission	Geothermal & Associated Transmission	Power Transmission, Distribution & General	Power Sector	Technical Assistance	Total
FY80 cont'd.					$ Millions							
	Jamaica	Fourth Power Project JAMP0042	Upgrade and expand transmission and distribution systems. Improve system efficiency. Provide consultants for managerial assistance and training.						13.2		4.8	18.0
	Dominican Republic	Power Sector Rehabili--tation and Distribution DOMP0029	Construct and rehabilitate the transmission and distribution systems, provide materials and meters for consumer service connections, provide technical assistance and spares for the rehabilitation of thermal generating plant, provide consultancy services for project design, financial and management systems as well as training in these areas.				38.5		60.5		6.0	105.0
	80	Number of projects = 15	FY80 Total for	Projects	365.6	33.4	262.7	44.5	758.3	300.0	59.9	1825.4
				% Share	20.0	1.8	14.4	2.4	41.6	16.4	3.3	100.0

FY80-88 ENERGY SECTOR LOANS
(by country)

The following list summarizes the Bank Group (including IDA) Energy Sector Loans.

Energy Sector Loans

FY	No. Loans	Power	Oil/ Gas	Coal	TA	General **/	Total
				US$ Millions			
82	1				1.7		1.7
85	1	85	82.0	6	5.0		178.0
87	1				15.0	310.0	325.0
88	3	28	3.5		4.0	176.1 */	211.6
Total	6	113	85.5	6	25.7	486.1	716.3

*/ Includes a $30.1 million 'B' loan (Turkey)

**/ Includes funds for policy reform, goods, services, equipment and materials.

ENERGY SECTOR LOANS

AFRICA

GAMBIA, THE

Energy Project Cr 1187-GM (FY82)	$1.5	$1.7

To assist the government in developing a strategy for accelerating hydrocarbon exploration, improving power distribution and making better use of its forest resources for energy.

NIGER

Energy Project Cr 1880-NIR (FY88)	$31.5	$86.0

To address the growing imbalance between energy demand and supply, focussing on the electric power sector, including extension of the interconnection to Nigeria, rehabilitation of transmission lines and institutional changes. Includes funding for improved petroleum exploration administration. The non-Bank financed portion ($54.5 co-financing) concentrates on power and household energy; the latter is considered an essential component and is administered by the Bank. IDA financing would focus primarily on power distribution facilities, engineering and supervision and the petroleum component.

EMENA

PAKISTAN

Private Energy Sector Development Project Ln 2982-PAK (FY88)	$150	$1893

Through a newly established Energy Development Fund, to help finance sub-projects in the development of energy resources under the auspices of the private sector, calling for the development of 2300 MW of power, 2 million tons of coal per annum, 132 mmcf/d of natural gas. The project includes loans and grants from bilateral aid agencies and private sector loans and suppliers credits.

TURKEY

Sector Adjustment $325
Ln 2856-TU (1987)

To support Turkey's medium-term energy sector reform program, which aims at improving the efficiency of public sector energy production and facilitating private sector participation in the energy sector. (Contains some oil and gas elements). In support of energy planning, training, computer hard and software, transmission equipment, energy audits and petroleum, and coal lignite, the loan includes $175 million for policy reforms and $150 million for foreign exchange of goods, services, equipment and technical assistance.

Energy Sector Adjustment $30.1 (B loan)

To provide additional funding to the Energy Sector Adjustment Loan (2856-TU) for eligible imports. This represents the Bank's share (25%) of a $25 billion of borrowing from commercial Japanese sources.

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