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AGENCY FOR INTERNATIONAL DEVELOPMENT

WASHINGTON D.C. 20523

PROGRAM ASSISTANCE APPROVAL DOCUMENT (PAAD)

PAKISTAN

ENERGY COMMODITIES AND EQUIPMENT

391-0486

JULY 1984

UNCLASSIFIED

AID 1120-1
(8-66)

PAAD

DEPARTMENT OF STATE
AGENCY FOR
INTERNATIONAL DEVELOPMENT

PROC'AM ASSISTANCE
APPROVAL DOCUMENT

1. PAAD NO.

2. COUNTRY

3. CATEGORY

Commodity Financing - Standard Procedure

4. DATE

July 7, 1984

6. TO: The Administrator, Agency for
International Development,
Washington, D.C.

6. OYB CHANGE NO.

N/A

7. FROM: The Director, United States
Agency for International
Development, Islamabad, Pakistan

8. OYB INCREASE

N/A

TO BE TAKEN FROM:

N/A

9. APPROVAL REQUESTED FOR COMMITMENT OF:
\$ 100,000,000

10. APPROPRIATION - ALLOTMENT

ESF

11. TYPE FUNDING

LOAN GRANT

12. LOCAL CURRENCY ARRANGEMENT

INFORMAL FORMAL NONE

13. ESTIMATED DELIVERY PERIOD

Dec. 1984 - Dec. 1987

14. TRANSACTION ELIGIBILITY
DATE

September 1, 1984

15. COMMODITIES FINANCED

Energy commodities and equipment in such categories as energy conservation and fuel conversions; power sector; coal mining and processing; renewable energy; oil and gas exploration and development; and, such other emergency commodity imports as USAID/Pakistan and AID/Washington may agree upon.

16. PERMITTED SOURCE

U.S. only: 100,000,000 (See Block 18)

Limited F.W.:

Free World:

Cash:

Pakistan (Minimum)

17. ESTIMATED SOURCE

U.S.: 100,000,000 (See Block 18)

Industrialized Countries:

Local:

Other:

Pakistan (Minimum)

18. SUMMARY DESCRIPTION

TITLE: ENERGY COMMODITIES AND EQUIPMENT (391-0468)

This PAAD authorizes \$100 million, consisting of \$80 million in loan funds and \$20 million in grant funds, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to finance the foreign exchange and local costs for the importation, by both the Pakistani public and private sectors, of energy commodities and equipment in such categories as: energy conservation and fuel conversions; power sector; coal mining and processing; renewable energy; oil and gas exploration and development; and, such other emergency commodity imports as USAID/Pakistan and AID/Washington may agree upon. This document describes a program covering the period FY 1984 - FY 1986, which is designed to provide balance of payments support and to contribute to energy production from indigenous resources or energy conservation in support of the Cooperating Country's Sixth Five-Year Energy Plan.

(Continued on next page)

19. CLEARANCES

AA/ASIA

AA/PPC

GC

FM/LMD

FM/PAD

Donor M. Lion Stein
Director, USAID/Pakistan

DATE

7 July 84

20. ACTION

APPROVED

DISAPPROVED

M. Peter McPherson

AUTHORIZED SIGNATURE

DATE

Administrator

TITLE

Dean Pratt
Controller (A), USAID/Pakistan

PROGRAM ASSISTANCE APPROVAL DOCUMENT (PAAD)
(Block 18 continued)

All accruals of proceeds to the Cooperating Country from the sale of grant-financed commodities shall, in accordance with Section 609 of the Foreign Assistance Act (FAA), be deposited in a Special Account to be utilized in development activities in such areas as agriculture, rural development, water resources, energy, population, education, health or any other use authorized by the FAA and agreed to by both parties, and where appropriate, may also be used to reduce opium poppy production and may be made available to pay U.S. administrative costs in Pakistan.

The Cooperating Country shall repay the loan to A.I.D. in U.S. dollars within forty (40) years from the date of the first disbursement of the loan, including a grace period of not to exceed ten (10) years. The Cooperating Country shall pay to A.I.D. in U.S. dollars interest from the date of the first disbursement of the loan at the rate of two percent (2%) per annum during the grace period and three percent (3%) per annum thereafter, on the outstanding disbursed balance of the loan and on any due and unpaid interest accrued thereon.

Except as A.I.D. may otherwise agree in writing, goods and services financed by A.I.D. under this program shall have their source and origin in the United States or in the Cooperating Country. Ocean shipping eligible for financing by A.I.D. under this program shall be on flag vessels of the United States or the Cooperating Country only.

PAAD
ENERGY COMMODITIES AND EQUIPMENT PROGRAM (391-0486)

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LIST OF ABBREVIATIONS

ACE	Agricultural Commodities and Equipment Program
ADB	Asian Development Bank
APAC	Asia Project Approval Committee
ATDO	Appropriate Technology Development Organization
BOP	Balance of Payments
BTU	British Thermal Unit
CCU	Commodity Control Unit
CIDA	Canadian International Development Agency
CDSS	Country Development Strategy Statement
CIP	Commodity Import Program
CPI	Commodity Procurement Instructions
DGER	Directorate General of Energy Resources
ECE	Energy Commodity and Equipment Program
EEC	European Economic Committee
EP&D	Energy Planning and Development Project
ESL	Energy Sector Loan
FAA	Foreign Assistance Act
GDP	Gross Domestic Product
GNP	Gross National Product
GOP	Government of Pakistan
GSP	Geological Survey of Pakistan
GWH	Gigowatt Hour (238 TOE)
IBRD	International Bank for Reconstruction and Development(World Bank)
IDA	International Development Agency(Soft Loan Arm of World Bank)
IDBP	Industrial Development Bank of Pakistan
IEDC	International Energy Development Consultants
KESC	Karachi Electric Supply Corporation
KFW	Kreditanstalt fur Weideraufbau (German Foreign Assistance Agency)
KW	Kilowatt, 1000 watts
LRMC	Long Range Marginal Cost
LPG	Liquified Petroleum Gas
MCF	Million cubic feet
MW	Megawatt, 1 million watts
O&M	Operation and Maintenance
OGDC	Oil and Gas Development Corporation of Pakistan
PCSIR	Pakistan Council for Scientific and Industrial Research
PERAC	Petro Refinery and Petro Chemical Corporation
PMDC	Pakistan Mineral Development Corporation
POL	Petroleum, Oil and Lubricants
REP	Rural Electrification Project
SER/COM	Office of Commodity Management
TCF	Trillion cubic feet
TOE	Ton Oil Equivalent (41 million BTU)
UNDP	United Nations Development Program
WAPDA	Water and Power Development Authority

GLOSSARY OF GOP MINISTRIES AND ORGANIZATIONS

Ministries

1. Ministry of Finance and Economic Affairs

The Ministry has two divisions, Finance and Economic Affairs. The Finance Division is responsible for overall financial policies and regulation. The Economic Affairs Division is responsible for economic coordination. Its main function is negotiation of multilateral and bilateral economic assistance and concluding assistance agreements with respective donor agencies and governments.

2. Ministry of Industries

Ministry of Industries has jurisdiction over the public and private sector industries, except the nationalized units. Its functions include industrial approvals, sanctions, regulation, oversight and administration of industrial practices.

3. Ministry of Petroleum and Natural Resources

The Ministry has official jurisdiction over the exploration, development, distribution and marketing of oil, gas, coal and non-fuel mineral resources. Functionally, the subject of energy policy and planning is also located in the Ministry of Petroleum and Natural Resources, in addition to its implementation responsibility for the development of commercial and non-commercial energy resources and for energy conservation.

4. Ministry of Planning and Development

The Ministry has the overall responsibility for coordination, development, planning and monitoring of development activities. Specifically the Ministry is engaged in medium and long-term planning in the context of the overall development of different sectors of the economy. Sectoral strategies are developed and the investment plans are formulated by the Planning Division in consultation with the ministries and organizations concerned. The Ministry is responsible for preparation of the GOP's Five Year Plans.

5. Ministry of Production

The Ministry manages the nationalized industrial units. The State Petro-Refinery and Petro-Chemical Corporation (PERAC) is located in the Ministry of Production. Other affiliates of the PERAC are National Refinery Limited, National Petroleum Corporation, Pak Hy Oil, Petroman and Enar Petrotech Services.

6. Ministry of Science and Technology

The main function is planning and coordination of applied research in the scientific and technological fields. Two research organizations under the Ministry, namely, Pakistan Council for Scientific and Industrial Research (PCSIR) and the Appropriate Technology Development Organization (ATDO), are involved in research endeavours in the field of non-conventional energies.

7. Ministry of Water and Power-

The Ministry has jurisdiction over matters relating to power and water resources. Its functions include policy, planning and execution of all power and water projects; generation and distribution of power; and, control of electricity and electric utilities.

Organizations

1. Appropriate Technology Development Organization (ATDO)

ATDO is a scientific and technological research and demonstration organization within the Ministry of Science and Technology. ATDO has ongoing programs in biogas and is involved in the mini-hydro installation program in the northern areas of the country.

2. Directorate General Energy Resources (DGER)

The Directorate General Energy Resources (DGER) is responsible for the development, deployment and demonstration of renewable energy technologies

3. Karachi Electricity Supply Company (KESC)

A public limited company which generates and distributes electric power in the Karachi area, KESC also falls under the Ministry of Water and Power.

4. Oil and Gas Development Corporation (OGDC)

The Corporation is responsible for the exploration and development of oil and gas resources both independently and in joint ventures with foreign firms.

5. Pakistan Mineral Development Corporation (PMDC)

The Corporation was formed as a specialized public sector agency in 1974 to undertake mineral exploration and development on a national basis. The PMDC operates four coal mines, a small coal briquetting plant and a coal washing plant.

6. Water and Power Development Authority (WAPDA)

WAPDA is a semi-autonomous organization within the Ministry of Water and Power. The Authority plans, executes, manages and operates all water and power projects. WAPDA is also responsible for generation and distribution of electric power throughout the country except in the Karachi area.

7. Geological Survey of Pakistan (GSP)

GSP is primarily responsible for collecting and providing geological information and coordinating exploration and evaluation of mineral resources with geo-scientific organizations. The organization is located in the Ministry of Petroleum and Natural Resources.

I. SUMMARY AND RECOMMENDATIONS

A. Recommendations

1. Funding

USAID/Pakistan recommends that the A.I.D. Administrator authorize \$100 million covering the period FY 1984 - FY 1986, for the Energy Commodities and Equipment (ECE) Program (391-0486), consisting of \$80 million in loan funds and \$20 million in grant funds, to finance the importation of equipment and commodities in the energy sector. These funds will be used to support balance of payments and energy sector objectives of the U.S. Economic Assistance Program in Pakistan. These objectives include the further rationalization of energy prices, increased participation of the private sector in energy development, and decreased imports of oil by means of energy conservation and increased use of indigenous energy resources. The Mission proposes to obligate \$20 million in FY 1984 and \$40 million each in FY 1985 and FY 1986.

Loan Terms: Repayment period 40 years from the date of first disbursement, including a ten-year grace period. Interest at 2 percent annually during the grace period, 3 percent thereafter.

2. Geographic Code

Except as A.I.D. may otherwise agree in writing:

- a. goods and services financed by A.I.D. under this Program shall have their source and origin in countries included in A.I.D. Geographic Code 000 or Pakistan only; and,
- b. ocean shipping for all commodities financed by A.I.D. under this Program shall be on flag vessels of the United States or Pakistan only.

B. Summary Program Description

The ECE Program will provide fast-disbursing foreign exchange resources for the importation of equipment and commodities into Pakistan that will contribute to energy production from indigenous resources or energy conservation in direct support of the GOP Sixth Five-Year Energy Plan. Benefits of the program include:

- mitigation of balance of payments problems by providing foreign exchange for the importation of energy sector equipment and by reducing oil imports resulting from the use of this equipment;
- supporting favorable policy objectives of the GOP in such areas as energy conservation and the increased use of indigenous coal and renewable energy resources;

- facilitating the transfer of energy-related technologies for use in the private sector in Pakistan; and,
- providing an additional basis for constructive policy discussions with the GOP on such issues as energy pricing and increasing the role of the private sector in energy development.

The ECE Program will, therefore, address many of the important financial and technical issues associated with achieving the goals of the GOP's Sixth Five-Year Energy Plan which, in turn, are major determinants of the country's performance.

The energy sector equipment likely to be financed under this program falls into five categories: energy conservation and fuel conversions; power sector; coal mining and processing; renewables; and oil and gas exploration. The equipment will be provided to both public sector and private sector entities. Eligible public sector entities include the Ministries of Water and Power, Petroleum and Natural Resources, and Science and Technology. In the first year of the program, the \$ 20 million will be allocated equally between the public and private sector windows. The public/private sector split in subsequent years will depend on actual implementation experience.

Preliminary demand estimates for each equipment category indicated demand potential in excess of \$200 million roughly split between the two sectors. During the three-year period of this program, the major demand in the private sector will be for energy conservation and fuel switching equipment. The largest demand in the public sector will probably be for power unit upgrading and line loss reduction equipment.

C. Statutory Criteria and Mission Director's Certifications

The program meets all applicable statutory criteria. Appropriate statutory checklists are included in Annex C. The Mission Director's FAA 611(e) certification, which certifies that Pakistan has the capability to maintain and utilize the program effectively, is contained in Annex B.

D. Program Issues

1. Policy Dialogue

Section III summarizes the broad USG and GOP policy goals for the six-year ESF package and for Pakistan's Sixth Five-Year Plan. These provide the context within which the ECE Program supports and reinforces key elements of the Mission's macro and energy sector policy objectives. The ECE Program does not operate in isolation as a policy tool, but serves to amplify and strengthen a complex set of policy discussions which the Mission will sustain with the GOP over the coming several years. There is a core set of policy issues, however, which are more explicitly built into the structure of the ECE Program. The Mission's plans and objectives in these areas are outlined in Section III.

As indicated in that Section, the Mission will be cooperating with and actively supporting the World Bank initiatives to rationalize consumer and producer energy prices and will also seek ways to provide a more favorable environment for private sector participation in the energy sector. Similarly, the ECE program reinforces USAID policy objectives in the energy sector which are being pursued under other bilateral projects in the portfolio.

Although the PAAD outlines how the Mission will pursue policy objectives under the ECE Program, no specific rate of progress is projected. The Mission will continue to share policy performance reports with Washington. Annual negotiations on the ECE Program will provide opportunities for both the Mission and AID/Washington to assess progress towards objectives in light of the total policy scene in Pakistan. The Mission believes that this is the most effective way to build the ECE Program into our overall multi-year, multi-sector development dialogue with the GOP.

2. Program Design Issues

The APAC cable of May 10, 1984 expressed AID/Washington concerns with respect to several design issues (See Annex A). The body of the PAAD addresses all the issues raised by the APAC review. Several are reviewed briefly below.

a. Public Sector Disbursements

ECE Program resources will be made available to those Ministries which have a direct involvement in energy supply and use, including the Ministries of Water and Power, Petroleum and Natural Resources and Science and Technology. Requests from these Ministries will be evaluated by an Equipment Selection Committee established within the Energy Policy Board. The latter organization, which is based in the Ministry of Planning and Development, has already been established to coordinate activities under the A.I.D -financed Energy Planning and Development Project (391-0478). This will provide a direct link between these programs and help ensure that approved equipment requests meet the objectives of contributing to energy efficiency or increasing the ability to utilize indigenous energy resources. All such requests will also be subject to USAID approval.

b. Targeting of Subsectors

The ECE Program will emphasize energy conservation and fuel switching equipment since preliminary demand projections indicate that equipment in these categories will comprise a major share of purchase by both the private and public sectors. Experience in the U.S. and elsewhere indicates that energy conservation is the most effective short-run way for reducing both the demand for imported oil and the financial impact of rising energy costs. The emphasis of the program on these equipment categories is, therefore, consistent with A.I.D. and GOP objectives.

Private sector procurements will be screened by the banks using GOP approved lists of eligible equipment as guidance. The public sector disbursements will be coordinated by the aforementioned Equipment Selection Committee which has the responsibility to ensure that equipment meets the eligibility criteria.

In summary, the demand estimates indicate that ECE Program will emphasize the financing of energy conservation and fuel switching equipment, and that the disbursement mechanics of the program should ensure that all equipment purchases meet mutual A.I.D./GOP objectives in all equipment categories with minimal oversight effort by A.I.D. staff. This conclusion will be reviewed on an annual basis to determine if targeting may be necessary in future years to both ensure an effective program and to improve project administration.

c. Market Interest Rates

USAID shares Washington's concerns that the private sector window of the ECE program does not incorporate interest rate subsidies. We seek to encourage energy investment and energy conservation measures which reflect economically sound resource allocation. We have determined that the interest rates required under GOP policies which govern donor-financed loan programs are effectively "market rates". They are market rates in that they do not significantly overprice or underprice capital. When combined with the relatively high tariffs on some energy commodities and the considerable transaction costs involved in private sector commodity importing, the net cost of capital is, if anything too high, not too low. Washington has agreed, in the recently approved Agricultural Commodities and Equipment (ACE) Project, to these interest rates and to the rationale upon which they were determined to be equivalent to "market" rates. The appropriateness of the interest rates will be reviewed periodically.

The PID guidance on ECE suggested that the Mission start with the existing interest rate structure and let experience guide any changes in future years. The issue has also been pursued at some length in an exchange of cables which includes: ISLAMABAD 12104; STATE 160238; and STATE 136812. In this exchange, the Mission presented the basic rationale for the proposed interest rate structure and the process by which we established that these rates were non-distorting. USAID also reiterated in this exchange that the first informal evaluation of the ACE program would include a review of the appropriateness of interest rates in the private sector window. USAID undertakes the same commitment for ECE.

d. Energy Program Linkages

The ECE Program both reinforces and is supplemented by other USAID energy sector programs such as the Energy Planning and Development (EP&D) Project and the Rural Electrification Project (RE). For example, the technical assistance provided by the EP&D Project will help identify appropriate and cost-effective applications for energy conservation equipment. The ECE program provides additional resources

for purchasing line loss reduction equipment as identified by the RE . The PAAD describes the linkages between the ECE program and other USAID energy activities.

e. Operations and Maintenance

Most of the entities purchasing equipment through the ECE Program will have extensive technical capabilities to operate and maintain equipment. The Water and Power Development Authority (WAPDA) and Karachi Electric Supply Corporation (KESC) will be purchasing equipment to improve and upgrade systems which they are now successfully operating. The private and public sector companies will have a clear incentive to ensure that their equipment purchases are consistent with their Operation and Maintenance (O&M) capabilities or that appropriate vendor training is provided. These O&M characteristics and issues are discussed in the PAAD.

3. Local Currency Generations

Section 609 of the Foreign Assistance Act (FAA) requires that the recipient country establish a Special Account for the deposit of rupee proceeds to the recipient country from the sale of commodities furnished with ESF on a grant basis. No grant money will be utilized during the FY 1984 ECE program so that this legislative requirement will not apply the first year. In FY 1985, grant funds will be used to finance only public sector purchases. No sale or accrual of proceeds, as contemplated under FAA section 609, will occur under the public sector portion of the program since the GOP does not "sell" this equipment to the autonomous agencies and ministries involved.

USAID and AID/W have sustained a useful dialogue on this subject which spans the past 15 months. The results of the dialogue are summarized in Islamabad 12085 which reviews the exchanges and states in part that AID's Policy Determination Number Five of February 1983 makes clear that the important issue is not the fact of programming, but the assurance that AID gains appropriate voice in the area of resource allocation policy in the recipient country. Our overall approach to local currency generations is built around this core principle in Policy Determination Number Five. In lieu of a "programming" activity with a "special account" which leads to meaningless attributions of expenditure on an ex-post basis, USAID melds its resource transfer programs into a broad platform for regular budget and resource allocation discussions with the Government of Pakistan. These discussions are conducted both by the Director at appropriately high levels in the GOP and by the senior staff of the Mission with their counterparts in the Economic Affairs Division of the Ministry of Finance.

The combination of commodity import and Title I programs which touch directly upon: (a) agribusiness; (b) the edible oil industry; (c) private sector energy investors; (d) public sector energy utilities; and, the public and private fertilizer industry gives the Mission a base for meaningful policy dialogue on resource allocations. USAID has a place at the table on such questions as the large fertilizer subsidy element of the GOP budget, shifting investment resources to agribusiness functions

best undertaken by private firms, and protecting resource allocations for agricultural and energy sector research priorities which may be threatened in times of fiscal squeeze. USAID finds that the access which it enjoys on these important resource allocation topics as a result of its approach to local currency generations is far more valuable than an orchestrated role in an annual, ex-post allocation exercise with the finance budgeters. This shift in programming approach has strengthened our overall policy dialogue with the Government of Pakistan. The case for an approach which is serious and actionable versus an approach which is demonstrably without substance was understood and accepted by all the agencies concerned with the \$ 50 million per year Title I program. The Mission considers that the arguments apply with the same force and validity to local currency generations from loan-financed commodities in ACE and ECE.

4. Private Sector CIP

The "private sector window" in the ECE program is an important element of the Mission's overall program of support to the GOP's Sixth Five-Year Plan goal of enhanced private sector activity in Pakistan. The effective demand for U.S. equipment will reflect a balancing of three factors: (a) technological advantage of U.S. supplied equipment; (b) quality advantages of U.S. equipment; and (c) price competitiveness of U.S. equipment. If U.S. manufacturers had to compete on price alone, there would be some doubt as to the total demand for U.S. goods under the Program. However, U.S. energy sector equipment is otherwise highly competitive on a worldwide basis due to a combination of proprietary technologies, adequate field support and availability, and often, competitive prices. During preparation of the PAAD, over a dozen private sector Pakistani firms were contacted. It is evident that U.S. equipment has an excellent reputation in selected categories such as controls and instrumentation, coal processing, high efficiency motors, and advanced renewable technologies. The preliminary demand estimates take into account the fact that U.S.-provided equipment must compete with European, Japanese, and regional manufacturers. Until experience is gained with the program, estimates are, however, highly speculative and only serve to indicate the areas of most probable demand. The Mission will, therefore, test the market with a phased approach to credit availability. The FY 1984 ECE Program will make \$10 million available through banks to the full universe of private sector borrowers. Based on the actual track record of this initial tranche, the pace of future tranches will be determined. This tranche constitutes a pilot effort to test market demand, pricing and interest rates for US energy equipment. Since the project is to be incrementally funded, it is appropriate to start with the existing pricing and credit system and consider possible modifications in subsequent years if experience during the first tranche period indicates that this would be desirable to achieve the objectives of the private sector window.

The Mission has held numerous discussions with GOP officials on the private sector CIP component but has not yet received official GOP concurrence on all elements of the proposed program. Section IV.B.3 describes the likely characteristics of the program and reflects the

position the Mission is taking in negotiations with the GOP on these matters. The major issues still under negotiation relate to participating banks, eligible importers, proposed payback periods for borrowers, procedures for making allocations to the banks, and the credit ceilings of participating banks. We anticipate reaching agreement with the GOP on these outstanding questions by the time of Program Agreement negotiations and will document the agreed upon particulars of the program, in a countersigned PII, prior to the disbursement of funds for the private sector CIP component. (See Section VIII).

E. Contributors to the PAAD Amendment

See Annex E for individuals who contributed to the development of this PAAD Amendment.

Ii. BACKGROUND

A. Relationship to U.S. Economic Assistance Program

Like the U.S. Economic Assistance Program of which it is a part, the ECE Program provides foreign exchange for balance of payments support and promotes specific development activities by financing imports of critical energy sector commodities and equipment. It serves as an important vehicle, in conjunction with other elements of the assistance package, for carrying out the energy sector policy dialogue. Local currency generations from the sale of commodities imported under this Program will also assist the GOP in carrying out important investment activities. Thus the ECE Program addresses major objectives of the U.S./GOP collaborative assistance program in Pakistan.

B. USG-GOP Negotiations

In a letter dated April 12, 1983 to AID Administrator Mr. M. Peter McPherson (See Annex #), the Minister of Finance, Mr. Ghulam Ishaq Khan stressed the overriding importance of the energy sector in meeting the economic goals of the GOP's Sixth Five-Year Plan and requested a commodity and equipment import program for the energy sector which would parallel the commodity import program already in place in the agricultural sector. The Minister requested that the program include oil drilling rigs to support the exploration and development program of Pakistan's Oil and Gas Development Corporation (OGDC).

On the basis of this request, the Mission undertook preliminary feasibility work to assess the prospects for such a program. The results of this work were summarized in a letter from the A.I.D. Administrator dated April 17, 1984, which indicated that "AID shares with the World Bank and others a firm commitment to defining public and private sector roles in petroleum development in ways which assign operational tasks such as drilling to the private sector and assign to the public sector those tasks which are inappropriate for private undertaking. We cannot, therefore, include drilling rigs for OGDC at this time." However, the letter further indicated that provision of selected seismic and related equipment would be consistent with USAID goals of strengthening OGDC's capability to develop the data base for attracting private capital into oil and gas exploration activities, and that the Mission was prepared to develop a program which would permit the purchases of selected equipment for the OGDC and other equipment and commodities directly linked to the goals and priority activities of the Sixth Five-Year Plan for the energy sector. This PAAD summarizes the agreed-upon program which resulted from these negotiations.

C. The Pakistan Economy

1. General

The economic trends which characterize Pakistan were described in the recent Agricultural Commodities Equipment (ACE) PAAD Amendment (May 1984) and the 1984 CDSS document. Government policies still are oriented toward fiscal and monetary restraint, incentive creating input/output relationships in agriculture, improved efficiency in the public sector, and

mobilization of the private sector. Until last year, these policies had contributed to an annual rate of growth of gross domestic product (GDP) of about six percent over the previous six years. In FY 1983/84, however, the growth rate was only 4.5% as compared to a Sixth Plan target of 6.4%. This was largely because of poor cotton and wheat crops. In addition, there was a slowdown in remittances, which directly affects gross national product (GNP). The GOP plan now calls for an increase in GDP of 8.5 percent in FY 1984/85 in order to bring the average economic growth over the last 2 years in line with the 6.4 percent called for by the Sixth Plan. This projection assumes that agriculture fully recovers from the previous years negative growth and resumes its recent growth pattern.

2. The Balance of Payments

Pakistan suffers from a chronic balance of payments deficit which worsened considerably in 1983/84 as compared to the previous year. Exports for PFY 1983/84 were about 46 percent of imports and the trade deficit was 10.4 percent of GNP. The current account deficit was \$1,006 million which was 3.2 % of GNP as compared to \$554 million or 1.9% of GNP the previous year. Factors leading to this poor year to year comparison included lower than expected exports and remittance flows, and poor harvests in key commodities, such as cotton.

The above factors also led to a decline in foreign exchange reserves. In 1982/83, foreign exchange reserves actually increased by \$1,111 million due to the relatively low current account deficit and substantial capital inflows. By contrast, reserves fell by approximately \$267 million in 1983/84.

The outlook for the period covered by this PAAD is for a continuation of many of the trends which negatively impacted on the 1983/84 results. These include a slowing in worker remittances and increases in edible oil imports. Recent GOP estimates (June 1984) project that the balance of payments outlook for 1984/85 is for the current account deficit to remain relatively constant in absolute terms but to decline to about 2.7% of GNP. Despite the prospects for increased foreign assistance disbursements resulting in increased capital inflows, the GOP projects that there will be additional drawdown on foreign reserves in excess of \$330 million.

The current level of foreign exchange reserves in Pakistan is equal to about 12 weeks of imports. This is a relatively high level for Pakistan but will fall significantly over the next year based on the above projections. The drawdown in foreign exchange reserves need not harm the Pakistan economy and might help in the short-term by reducing inflationary pressures through a more slowly growing money supply. If reserves are drawn down by the amounts indicated above, there would also be additional leeway to allow for a more rapid expansion in domestic credit, particularly to the private sector which is key to achieving the GOP's Sixth Plan goals.

D. Economic Impact of the ECE Program

The \$ 20 million in ECE Program resources supplements two other commodity import programs, the Agricultural Commodity and Equipment (ACE) Program and the PL-480 Title I Program. Together they will account for \$140

million in foreign exchange, most of which will be disbursed within one year. With a projected current account deficit of about \$1,000 million in FY 1984/85, these programs will clearly represent a meaningful contribution to the management of Pakistan's foreign exchange problem.

Over its three-year life, the ECE Program will help alleviate foreign exchange constraints in two ways:

1. directly, by contributing \$ 100 million in foreign exchange for imports required to meet specific targets of the GOP's Sixth Five-Year Plan; and,
2. indirectly, by either saving energy or increasing domestic supplies, thereby reducing oil imports. Much of the equipment, such as that for use in energy conservation, will have payback periods of 1-3 years, based on the cost of imported oil. Therefore, depending on the mix of equipment purchases, these indirect savings in foreign exchange could be as much as \$ 100 million in reduced oil imports over three years.

The net foreign exchange impact of the program could, therefore, approach \$ 200 million in three years, with obvious favorable impacts on the balance of payments problem.

The importation of energy sector equipment under the ECE Program should not exacerbate the inflationary situation in Pakistan. In fact, the program will reduce inflationary pressures by reducing the size of the current account and the Government budget deficits. Most of these commodities would have been or should be imported even without this program. Government expenditures are not likely to increase as a result of this program.

E. Energy Sector Review

1. Energy in the Economy

The energy sector of the Pakistan economy is critical to continued development. It is small but growing rapidly. Per capita consumption of commercial forms of energy is only half of the average for developing countries. Traditional energy resources such as firewood, charcoal, animal and agricultural wastes meet about 35 percent of energy demand. Energy scarcity has become a bottleneck to the rest of the economy. Inadequate supplies of natural gas and electricity have led to substantial load shedding. This has created a pattern of factory stoppages and reduced supplies of tubewell water for irrigation. It is very likely that uncertainty about the availability of energy has restrained private sector industrial investment, particularly in large-scale manufacturing. Petroleum imports are growing rapidly, amounting to roughly three-fourths of merchandise exports. Consumption expenditures are shifting toward energy intensive patterns such as automobiles, air conditioners and other electric consumer goods. Energy consumption has been growing about forty percent above the real output growth of the economy, an energy growth to GDP growth ratio which cannot be sustained and suggests the need to sharply increase the efficiency of energy use.

The Sixth Five-Year Plan recognizes the critical role of energy availability in economic development and requires a 9.4 percent per annum increase in commercial energy to support the planned for 6.4 percent per annum increase in GDP. To support this rapid increase in energy development, about 40 percent of all public expenditures in the plan are for the energy sector.

2. Energy Supply and Demand

Table 1 sets out the primary energy supply by fuel for 1983/84 which is the first year of the Sixth Five-Year Plan. The total primary energy consumption is currently estimated at about 17.7 TOE per year for commercial fuels and 9.3 TOE for traditional fuels such as firewood, charcoal and cowdung. All of Pakistan's commercial energy resources are domestic except for petroleum, 90 percent of which is imported. Pakistan's petroleum imports amounted to 124,000 barrels per day in 1983/84, accounting for 25% of the total import bill.

Figure 1 illustrates the primary energy consumption by economic sector. The industry, transport, fertilizer, residential and power sectors are the most energy-intensive, accounting for 87% of total primary energy consumption. It is evident that future economic growth of these economic sectors will depend heavily on the availability of fossil fuel and hydel energy. The target energy supply levels by 1987/88 as indicated in the Sixth Five-Year Plan are also set out in Table 1. The Sixth Plan objective is to limit the growth of petroleum imports to 11% per year. These targets can only be achieved, however, by increasing indigenous oil and natural gas production, promoting use of indigenous coal, and implementing energy conservation practices.

Pakistan has good prospects for increasing its energy supply. Total proven reserves of natural gas are about 15.7 trillion cubic feet with 45 percent of this at the large Sui gas fields. Assuming gas consumption increases by 7% p.a., these proven reserves are sufficient for 20-25 years. Tapping these resources will require exploration and development efforts in addition to reducing bottlenecks in the distribution system.

Petroleum reserves in Pakistan are modest and expensive to develop. The OGDC estimates reserves at 80-95 million barrels which would only be sufficient for 3 years at present use rates in the absence of imports. Despite these modest reserves, domestic petroleum development is essential to keep petroleum imports within the target growth rates. The Sixth Plan projects an increase in indigenous oil production from 13,600 to 21,000 barrels per day over the Plan period. Recent finds by Occidental Petroleum and Union Texas have increased this figure by 2000-3000 barrels per day. These finds may also increase the estimates for petroleum reserves.

Pakistan currently produces around 2 million tons of coal per year. Most of the coal is poor quality lignite or sub-bituminous coal with limited coking potential. The Sixth Plan calls for an 8.8% average growth rate in supply. Increased demand by the residential sector may develop if low-cost approaches to upgrade domestic coal through briquetting are developed.

The Sixth Plan calls for a 10% p.a. average increase in hydel power production. A provision of Rs 200 million has been made in the Sixth Plan to

TABLE 1
ENERGY SUPPLY IN PAKISTAN

Energy Source	<u>1983-1984</u>		Share of Commercial Energy (Percent) ^{3/}	<u>1987-1988</u>		Average Annual Growth Rate Over Period of Sixth Five- Year Plan (Percent)
	<u>Energy Supply</u> (Million TOE)			<u>Energy Supply</u> (Million TOE)		
Oil	6.73	138,000 barrel/day	38.0	10.9	223,000 barrel/day	11.3
of which domestic	(0.67)	(13,700 barrel/day) ^{1/}	(3.7)	(1.04)	(21,000 barrel/day)	(11.3)
Gas	6.85	852 MMCFD	38.5	9.51	1200 MMCFD	6.8
of which feedstock	(1.05)	130 MMCFD	(5.9)	(1.19)	(147 MMCFD)	(3.2)
Coal	0.90	2.0 million tons	5.0	1.37	3.04 million tons	8.8
of which unreported	(0.14)	(0.3 million tons)	(0.8)	(0.21)	0.47 million tons	(8.4)
Hydro	3.14	13200 GWH	17.7	4.01	16800 GWH	10.0
LPG	0.07	0.73 million tons	0.4	0.22	2.29 million tons	25.7
Nuclear	0.02	84 GWH	0.1	0.02	84 GWH	0
Total Commercial	17.71	--	100	26.03	--	9.6
Traditional Fuels	9.3	26 million tons	(35) ^{2/}	10.5	29 million tons	2.5
Total Energy	26.7	--	--	36.5	--	7.2

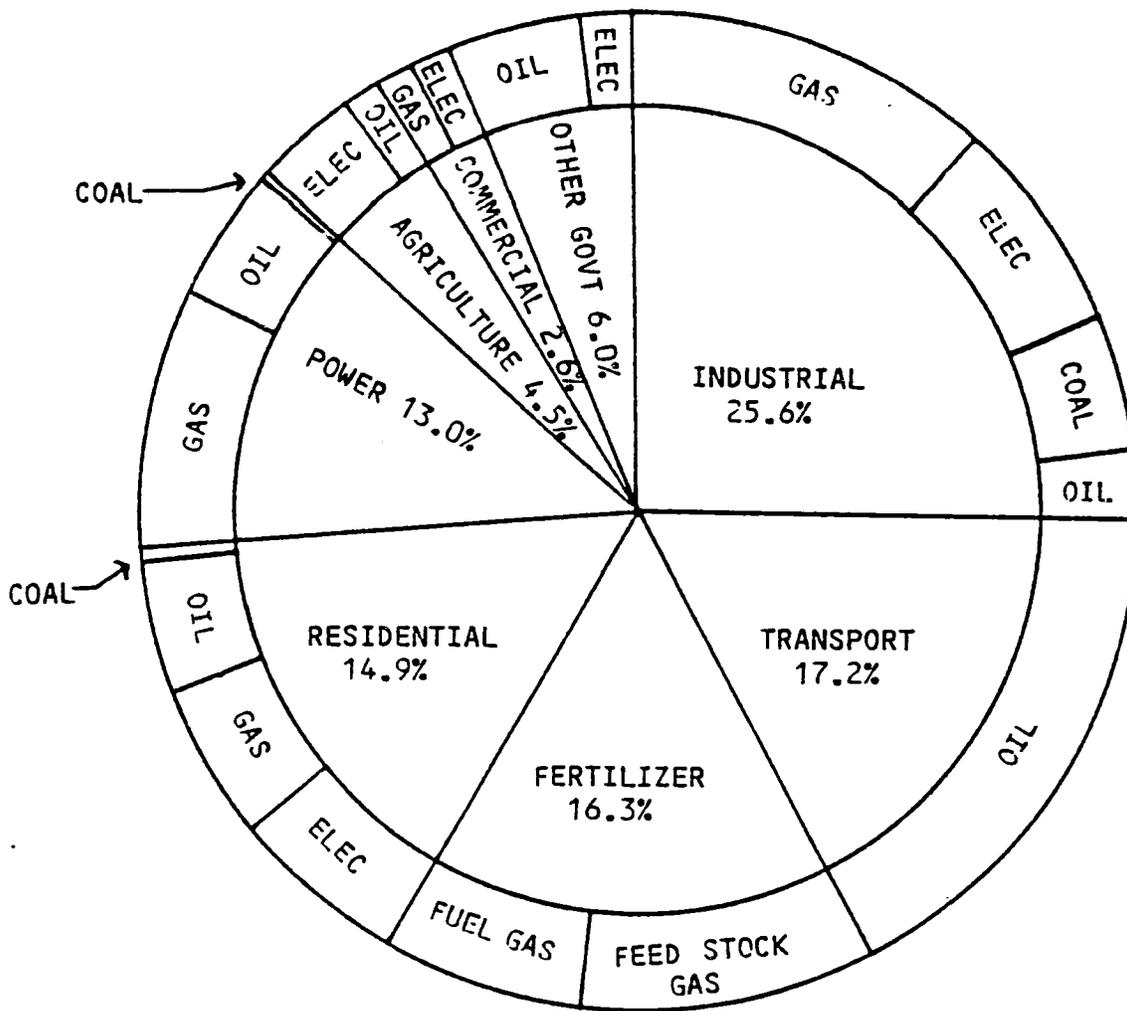
^{1/} Recent find by Occidental Petroleum in Potwar Basin has increased this figure by 2000-3000 barrel/day

^{2/} Share of Total Energy.

^{3/} Percentages have been adjusted to include feedstock gas and unreported coal production.

Source: Pakistan Economic Survey 1983-84, Pg99

Figure 1: Commercial Energy Consumption by Economic Sector (1983-84)



Source: Pakistan Economic Survey p.97
 (Percentages have been adjusted to account for feedstock gas)

install small hydel stations. In addition, WAPDA is surveying the entire irrigation system to identify sites which are suitable for hydel utilization. A site (2000 MW capacity) has been located at Bosha near Chilas, and a feasibility study is near completion.

Studies indicate that the supplies of traditional fuels will be difficult to maintain, let alone to increase, in order to handle the effects of a 3 percent population growth and an increase in per capita income. This could place even greater demands on commercial fuels. During the Sixth Five-Year Plan, efforts will be undertaken to increase the supply of biomass and improve the efficiency of its use.

Currently, neither solar nor wind energy resources are used to any significant extent in Pakistan. The availability of solar energy is high, especially in such areas as Baluchistan, and there is a great deal of interest in using solar energy to provide power in rural areas. The potential for wind energy is limited to a few areas on the coast and in the mountains. While small-scale wind pumping may be feasible in these areas, wind systems are not likely to play a significant role in the future national development of Pakistan's energy resources.

Energy conservation measures have begun to be implemented in a few of the major industries. The Sixth Plan has specific goals to improve energy utilization efficiency in the industrial, agricultural, power, transportation and residential sectors that will reduce commercial energy demand by about 9% by the end of the Plan period. Experience in the United States and elsewhere indicates that this is an attainable goal if the needed equipment is available.

In summary, Pakistan will be relying heavily on expansion in domestic energy resources and energy conservation to support economic growth. The Sixth Five-Year Plan has limited the increase of imported oil from 124,000 to 202,000 barrels per day over the Plan period. This increase will be sufficient to supplement incremental energy demand only if the following objectives are met by PFY 1987/88:

- a. a 40 percent increase in gas supply;
- b. a 62 percent increase in production of crude oil;
- c. a 53 percent increase in consumption of coal;
- d. a 50 percent increase in non-commercial fuels for the agricultural sector; and,
- e. a 9 percent increase in efficiency of energy utilization.

Accomplishing these objectives will require the timely implementation of numerous energy projects which will require substantial amounts of energy-related equipment. The ECE Program will provide resources to import this equipment which is not domestically available. If the Sixth Five-Year Plan does not accomplish these above objectives, oil imports will rise or economic growth targets will not be met or some combination of both will occur. For example, if only one-half of the targets in gas production and energy conservation is achieved by PFY 1987/88, oil imports would have to increase by 60,000 barrels per day in excess of Plan goals to meet economic growth targets, which would have a devastating impact on the balance of payments.

F. Other Donor Activities

The ECE Program has been designed to complement and supplement both other USAID projects and the extensive activities of other multilateral and bilateral donor organizations such as the World Bank, Asian Development Bank (ADB), and the Canadian International Development Agency (CIDA). The World Bank alone is planning to provide in excess of \$500 million over the next five years to Pakistan for energy sector activities and is in the process of preparing a \$150 million Energy Sector Loan (ESL) package. The activities of these other donors in each of the equipment sectors covered by the ECE Program are described briefly below.

1. Industrial Energy Conservation

Through the EP&D Project and this ECE Program, USAID will be taking a leading role in supporting energy conservation initiatives in Pakistan. Other donors will also be contributing to this important field.

The UNDP has allocated approximately \$190,000 to assist in undertaking surveys and energy audits on major industrial sectors. One mobile energy unit equipped with flue gas analysis and energy flow monitoring equipment will be purchased with these funds. The Directorate General of Energy Resources (DGER) is currently seeking funding to augment this program by providing nine additional mobile units for quantitative energy efficiency survey work. This work would lead to a detailed characterization of energy use by each major industry.

The World Bank is providing \$1.2 million for an energy conservation program at the National Refinery in Karachi. Under this program, the efficiency of individual unit operations at the refinery are being characterized and process modifications recommended. The recommended process improvements will include modifications of existing equipment and replacement with energy efficient equipment, some of which will be purchased with ECE Program funds.

2. Renewable Energy

The use of renewable energy systems in Pakistan is modest, and there has, therefore, been limited donor activity in this field. The major donor funding has been in support of the photovoltaic demonstration projects being directed by the DGER. Donor support for this program amounts to about \$ 6 million, with Japan, France, UNDP, and the EEC being the primary funding sources.

Much of the assistance in this area has been provided bilaterally and has, as its major objective, the promotion of commercial interests in this potentially important technology.

3. Coal Mining

A.I.D. has been in the forefront of stimulating interest within the GOP and other donor organizations in Pakistan's coal sector. Both the World Bank and ADB have shown interest in supporting the proposed Lakhra project. If studies being funded by USAID confirm the feasibility of coal for

power, their financial contributions to the Lakhra project are likely.

Other donor activities in the coal sector are limited to an \$8 million World Bank project to undertake exploratory drilling at the Dukhi coal field in Baluchistan.

4. Power Sector

The power sector is the largest single beneficiary of donor support in Pakistan. This is consistent with the large capital needs of this sector and the critical role it plays in Pakistan's overall development. Most major power and distribution projects in Pakistan have some donor support. For example, the GOP-USAID Rural Electrification Project provides partial funding for the GUDDU combined cycle power plant with co-funding of approximately \$140 million from the ADB. In addition, the World Bank, CIDA, and the Kuwaiti Fund provide substantial support to the power sector. World Bank funding alone is currently on the order of \$100 million per year with emphasis on improving the transmission systems. The World Bank program in this sector will expand significantly if the proposed \$ 2 to \$ 4 billion Kalabagh hydro-electric project is implemented.

5. Oil and Gas Sector

The World Bank, CIDA, and the ADB are providing significant funding in oil and gas exploration and development. The World Bank recently approved two loans to the OGDC: (a) a \$30 million loan for the Phase II development of the Toot oil field for the drilling of four wells plus associated surface treatment facilities. Over its life, Phase II is expected to result in an additional 1.4 million barrels of oil, 71 BCF of gas, and 3.5 million barrels of LPG; and, (b) a \$51.4 million to improve Pakistan's exploratory attractiveness in the eyes of foreign private sector companies. In addition to regional seismic and export promotion elements, 70 percent of the funds are allocated for drilling six exploratory wells. It is likely that the World Bank will also provide an additional \$1.8 million for an exploration promotion program requested by OGDC and \$3 million worth of surface equipment for the Toot oil field.

In approaching energy sector lending, the World Bank is encouraging the GOP to develop a sound exploration and development strategy by increasing oil and gas prices, clarifying the roles of the public and private sectors, and strengthening the capabilities of the OGDC.

Since 1974, CIDA has been the largest individual country donor to Pakistan's oil and gas industry. CIDA's focus is on training of OGDC staff although about 65 percent of the \$16 million CIDA intends to provide over the next two to three years is expected to be used for well stimulation to improve the productivity of existing OGDC wells.

The ADB is funding or is planning to fund \$168 million worth of field development projects as follows:

<u>Project</u>	<u>In US \$ Million</u>	<u>Period Covered</u>
Mari Gas Development	50	1984-86
Pir Koh Phase II (Gas)	40	1984-86
Dakhni Development (Oil)	32	1985-88
Sui Compression and Purification Project	19	1985
General Purpose Loan (to develop several small gas fields)	<u>27</u>	1984-87
TOTAL	168	

The ADB has also provided about \$40 million for the OGDC's recently completed Indus Right Bank Compression and Pir Koh Integration Project. The ADB is also currently funding a program, started in 1982, to prepare a comprehensive investment plan for the energy sector which will include resource equipment for implementation of the plan.

In addition to the above, the OGDC is receiving support from Norway (offshore seismic surveys), Russia (drilling rigs), and is in the process of entering joint venture agreements with Kuwait and Iran.

III. ENERGY SECTOR POLICY ANALYSIS AND DIALOGUE

A. Overview of the Policy Context of the ECE Program

This section presents the broad USG and GOP policy goals for the six-year ESF package and for Pakistan's Sixth Five-Year Plan. These provide the context within which the Mission will utilize the annual ECE negotiations to support and reinforce key elements of both its macro and energy sector policy objectives.

In a June 1984 memorandum to the Assistant Administrator for Asia, the Counselor for Development of the Agency stated the following:

"I suggest that you now request the Mission to include in the PAAD a discussion of whether, or how the ECE will be used to support the Mission's overall strategy. Can it be used to leverage specific aspects of policy movement this FY? Will it provide a forum for discussing energy issues with the GOP? Which issues would be included on the agenda for such discussions?"

This section of the PAAD seeks to respond fully to the Counselor for Development's request and to present the breadth of USAID/Government of Pakistan/World Bank dialogue and cooperation on energy sector issues. The ECE Program is one important part of an AID portfolio in energy which frames our work in assisting Pakistan to achieve the structural reforms and policy changes which are necessary to reach the goals of the Sixth Five-Year Plan and to service the longer term energy requirements for self-sustaining economic growth and social development.

Like all Commodity Import Programs (CIPs), the ECE program is first and foremost a balance of payments (BOP) tool. As such, it provides the Mission an opportunity to link the ECE negotiations to other USAID/Pakistan balance of payments negotiations (especially PL 480 Title I and the on-going Agricultural Commodities and Equipment Program) in a broad review of resource allocation priorities in Pakistan. The foundation of the six-year ESF program in Pakistan is a bilateral understanding that the economic assistance package will assist the GOP to meet the BOP requirements associated with the costs of an enhanced defense capability required to meet mutually important strategic and geopolitical objectives in Southwest Asia. In this context, the ECE program fits into a broader pattern of fast-disbursing US economic assistance, and the Mission's policy discussions with the GOP are inevitably interlinked with these other programs.

The ECE Program is targeted on two very important policy objectives which go beyond the BOP rationale for the program: increased private sector participation in the energy sector and improved energy pricing policies. These are major sub-themes of the Mission-wide policy concern for supporting and facilitating the GOP's progress toward broad economic liberalization and an enhanced role for the private sector in both resource mobilization and productive investment.

The ECE PAAD provides the Mission with additional tools with which to conduct the policy dialogue on these two major topics. The emphasis of the ECE program on energy conservation provides an opportunity to stress the potential for rationalizing energy prices without the need to increase per unit output energy costs. The private sector window of the ECE Program provides an annual opportunity for the Mission to deal directly with the GOP on issues related to banking, credit to the private sector, loan terms for private investors, and the like. These are opportunities for meaningful policy dialogue, backed by resources, which the Mission would not have without the ECE Program.

B. Energy Sector Policies: The GOP's Sixth Five-Year Plan

The overall goal of the GOP's Sixth Five-Year Plan (1983-88) is the rapid and equitable development of the nation. The Plan also reflects a shift of public sector priorities from industrial projects and fertilizer subsidies to rural development, energy infrastructure, and the social sectors. Significant objectives of the Sixth Plan include the deregulation of a significant proportion of existing government controls on the national economy to more fully utilize the capabilities of the private sector and the targeting of the poorest elements of society for programs in nutrition, housing, water, sanitation, education and health.

The importance of the energy sector in the Sixth Five-Year Plan is evidenced by its being allocated 40 percent of all public sector resources, the largest of any single sector. This large resource allocation reflects the GOP's recognition of the critical link between energy development and economic growth. The Plan's goal is to maintain an average energy growth rate of 9.6 percent per annum in order to support a 6.4 percent per annum growth rate in GDP.

The general policies stated in the Plan are to:

1. enforce efficient use of energy through education, legislative measures and price mechanisms;
2. ensure adjustments for realizing growth targets of the Sixth Plan in an energy-efficient manner;
3. arrange inter-fuel adjustments with the objectives of minimizing import-dependence within the Plan period;
4. prepare for growing self-reliance in energy during the Seventh Plan and beyond;
5. develop indigenous sources of energy such as coal, renewable energy and nuclear energy, intensify the search for yet undiscovered resources, and acquire full command of energy substitution technology;
6. ensure coverage of the entire rural population residing in compact villages by rural electrification;

7. evolve mechanisms for greater participation of the private sector in meeting the energy requirements of the nation;
8. ensure proper institutionalization of longer-term energy planning, monitoring and evaluation; and,
9. rationalize energy prices.

USAID endorses these Plan objectives. The ECE Program will directly and indirectly contribute to the achievement of most of them. Even if all energy sector objectives of the Plan are met, the assumed growth in economic development will require over a 50 percent increase in oil imports during the Plan period. Achieving this goal, in turn, will require meeting three important Plan targets:

1. increasing oil production from 13,000 barrels/day to 21,000 barrels/day (a 60 percent increase);
2. increasing gas production from 856 MMCF/day to 1204 MMCF/day (a 40 percent increase); and,
3. improving the efficiency of energy utilization by 10 percent through more vigorous energy conservation measures.

The first two targets assume that the private sector will greatly expand its role in this sector and will contribute about 40 percent of total capital needs for exploration and field development during the Plan period.

Without policy reforms, it is not assured that the anticipated participation by the private sector will in fact take place. This is due, in large measure, to low producer gas prices and overall not entirely effective natural gas concession terms. Gas pricing issues directly affect oil exploration levels by the private sector since Pakistan is a gas prone country and any drilling activity is more likely to discover gas than oil.

Achieving the third target will depend importantly on consumer pricing of natural gas and electricity. The planned-for increase in gas prices to 66 percent of the border price of fuel oil by 1987 is critical in achieving Plan objectives. However, no specific plan is currently in place for increasing electricity prices, which reduces the incentive to implement needed energy conservation measures relative to electricity consumption.

In summary, although the Plan's objectives are commendable, more vigorous implementation of specific policies relative to both producer and consumer pricing is required if the goals of the Plan are to be achieved.

C. GOP Policy Performance in the Energy Sector

I. General

The ECE Program, when combined with other Mission energy sector projects, gives the Mission a seat at the energy policy dialogue table on a broad range of issues and will increase USAID's ability to assist the GOP to meet its energy sector goals.

In general, the GOP has been moving in a positive direction on energy policies as evidenced by its commitments in principle to expand the role of the private sector and rationalize energy prices. The GOP's focus on these issues is relatively recent, however, since before 1980 it was perceived (incorrectly) that there were ample supplies of natural gas which somewhat buffered Pakistan from the "energy crises" affecting most other countries. The recent and current attention to pricing, fuel substitution, energy conservation, and energy planning is in many ways similar to that which occurred in the U.S. and other industrialized countries in the mid to late 1970's, when rapid oil price hikes led to an appreciation of the need to conserve energy and foster policies to stimulate the development of other energy sources.

USAID and other donor organizations are well positioned to support the GOP in its policy deliberations by drawing upon experience gained in the U.S. and elsewhere. USAID and other donors can also provide technical and analytical support and equipment needed to implement policy objectives. The ECE Program provides resources for the latter thrust.

The following sections review GOP performance in recent years in specific areas of energy sector policy. Not all of the areas described will be centrally linked to ECE, but it is appropriate to present the wider picture because of the highly integrated and interlinked nature of the policy dialogue process. The following discussion therefore, should be read and understood in the broader context of overall Mission goals for energy sector policy reform.

2. Pricing Policy: Recent GOP Performance

The rationalization of both consumer and producer energy prices is critical to the achievement of Pakistan's energy goals. As indicated below, the GOP has made substantial progress in this area but much remains to be done. The following discusses general GOP policies relative to energy pricing.

a. Consumer Prices

The general policy relative to the pricing of petroleum products is overall cost recovery. There is, however, a significant amount of cross subsidization between petroleum product prices which are influenced by social and economic factors. For example, gasoline subsidizes the prices of kerosene and diesel fuel. The costs of all petroleum products have risen dramatically over the last two years (50-100 percent) as a result of government policies to adjust petroleum

product prices to reflect, on the average, the actual cost of importing and refining crude oil.

Natural gas consumer prices have been maintained at artificially low levels to encourage the substitution of gas for imported oil and to help alleviate other inflationary pressures. Despite a substantial increase in prices in January 1982, the weighted average price level for all consumers was about 24 percent of the energy equivalent fuel oil export price as of June 1982. Consumer prices for natural gas were again raised in January 1983 by 23 percent. The GOP plans to increase consumer prices gradually to two-thirds of the fuel oil equivalent export price by FY 1987-88. These increases in natural gas prices will provide additional incentives for implementing energy conservation measures in all sectors and for increased participation of the private sector in exploration programs.

No direct subsidies are provided to the electric sector as a whole. There is a wide range in electricity prices both among consuming classes and within a given class. A residential rate schedule was implemented in 1981 to discourage large increases in residential demand. Very low rural rates are intended to improve living standards and the productivity of rural populations. The rates in the KESC (Karachi) service area typically are twice as high, on the average, as in the WAPDA service area. This is due to the fact that cheaper hydro power constitutes about 60 percent of the WAPDA supply while KESC depends exclusively on thermal generation.

The cost of coal is not significantly below that of oil but is significantly higher than that of natural gas. This explains, in large part, the declining role of coal in Pakistan since the introduction of natural gas. The relatively high cost of coal, to some extent, is due to the low demand and resultant small size of existing mines. Coal mines using modern practices on a large scale should result in prices competitive with oil and with gas once the gas pricing structure is modified.

Wood is commonly sold as a commercial fuel in urban areas to small commercial establishments (such as restaurants) and for tobacco drying. In some areas of Baluchistan and the NWFP, it must be trucked in, due to local scarcities. The cost of wood has been increasing rapidly in recent years and now approximates that of kerosene in some areas. In most areas, the cost of wood is considerably higher than that of coal. This is one reason why coal briquettes are being considered as a means of supplementing and substituting for wood use in household and small commercial applications.

b. Producer Prices

Although the GOP has made some progress, producer prices are still not adequate to stimulate needed private sector participation in the oil and gas sector. Details of specific concession agreements are difficult to come by. However, industry representatives in general feel that pricing policies for oil are now reasonable and

sufficient to stimulate interest, assuming exploration tracts with good oil potential are identified. This situation reflects a major advance in producer pricing policy over the last two years.

However, Pakistan is a gas prone country geologically, and any given drilling operation is more likely to find gas than oil. Therefore, even companies interested in exploring for oil have a deep rooted interest in the value of any natural gas which may be discovered. The GOP position is that the pricing of gas discoveries will be negotiated after the discovery is made, using some form of a rate of return formula. Such uncertainty and imprecision with respect to rates of return and pricing are not conducive to encouraging private sector exploration.

Pricing agreements on already discovered gas have been slowly improving. For example, Sui gas prices have increased from \$0.25/MCF to \$0.66/MCF over the last 2 years. This represents useful progress in gas pricing policy. It is not clear, however, whether it is sufficient to attract new foreign or domestic private sector capital. Attracting private sector participation for oil and gas exploration probably requires further adjustments in producer gas pricing policy and associated concession agreements. Industry observers estimate that producer prices for gas of between \$1 and \$2 per MCF would provide the needed incentives.

3. Energy Planning

Energy sector analysis and planning is an important input to policy reform. The GOP has made important progress in energy planning. As part of preparing the Sixth Five-Year Plan, the GOP acquired the services of the IEDC of Geneva, Switzerland, to assist in developing an energy sector data base and energy supply - demand models. The outputs of the energy planning exercise were important inputs in formulating the constructive policies included in the Sixth Plan.

The GOP is committed to strengthening and institutionalizing its energy sector analysis and planning capability by establishing an Energy Planning Cell within the Ministry of Planning and Development. This will be undertaken as part of the A.I.D.-financed Energy Planning & Development Project and represents a substantial forward step toward developing appropriate energy policies.

4. Coal Utilization

The GOP is now adopting policies which will accelerate the use of domestic coal with favorable impacts on fuel oil and gas consumption. These policies have already resulted in a commitment to use coal in one or more power plants. Studies to convert selected heavy industries to coal are also in progress. In large part, these activities were stimulated by USAID through its work on the Lakhra coal power project and associated discussions with GOP officials concerned with Pakistan's energy sector.

5. Energy Conservation

Experience in the U.S. and elsewhere indicates the overriding importance of energy conservation as an integral part of rational energy sector policy. The GOP is aware of this favorable experience and now considers energy conservation to be one of the cornerstones of its energy policy. The GOP intends to implement this policy with technical assistance programs, energy audits in both public and private sector companies, and possibly regulations requiring specific energy reduction steps. USAID will be supporting the first two activities through its EP&D Project. Regulatory steps to require and monitor energy conservation by energy users would be less needed if appropriate pricing policies were vigorously pursued. The GOP's strong interest in energy conservation provides a favorable environment for rationalization of energy prices. The ECE Program directly supports progress in this area by contributing to the implementation of energy conservation measures.

D. USAID/Pakistan and the Policy Dialogue

1. Background

The major multilateral donors, the GOP, and A.I.D. are engaged in a multi-year approach to structural reforms and sectoral policy reorientation. These parties share common long-term goals in the policy dialogue including increased investment, more efficient resource allocation and utilization, increased private sector participation, and sustained high economic growth rates.

The multilateral donors have set out a macro-policy reform agenda to move the nation towards economic liberalization in which public and private sectors will be increasingly focussed upon their areas of comparative advantage, with the public sector concentrating on the provision of public goods and infrastructure and the private sector increasingly responsible for the production and distribution functions of the economy.

AID works in a number of different modes in pursuit of important development goals which we and the GOP share. Elements of our policy dialogue are pursued in concert with the multilaterals and the GOP in the framework of the periodic donor consortium meetings and other informal working sessions which lead up to those meetings. Elements of the policy dialogue make up part of the backdrop to our broad bilateral discussions with the GOP on resource allocation, sectoral priorities and development strategy. Perhaps the most active element of the dialogue is that which is built directly into our project portfolio. We work with the GOP on a broad range of economic and institutional objectives in the conduct of project activities. The Energy Planning and Development and the Rural Electrification projects are prime examples. There are important macro themes which are woven into all three elements of our dialogue and which are worth recounting. It is important, of course, to recognize that these themes are pursued in different ways, with different tools, and occupy different degrees of centrality to USAID's working agenda. They need to be viewed as a collectivity, however, in order for AID and the

GOP to understand the linkages and interdependencies between them. The macro-policy themes in the USAID/GOP policy dialogue include:

- a. policies to curb new capital spending on public sector production enterprises in sectors where the US is active;
- b. policies to limit capacity increases in existing public sector plants in sectors where the US is active;
- c. policies which move Pakistan away from the "cost-plus" approach to regulating returns to private investors, with particular reference to sectors such as fertilizer where the AID program is directly engaged;
- d. policies which seek to provide a fair and competitive environment, or in the words of a recent demand to the GOP by local bankers, a "level playing field" for public, private and international financial institutions in Pakistan;
- e. policies to remove inequitable credit access favoring public sector enterprises over private enterprises;
- f. policies to properly price capital so as to reflect its opportunity costs;
- g. policies which remove administered prices to the maximum extent possible and remove barriers to private entry into industrial sectors;
- h. progressive disinvestment of inappropriate public sector assets, especially in the edible oil sector;
- i. equitable investment rules and tax treatment for private sector productive investments;
- j. equitable pricing of inputs (e.g., electric power) to private users;
- k. policies designed to enhance private sector resource mobilization; and,
- l. policies designed to liberalize the financial system.

The policy core of the ECE Program is linked with the deregulation agenda outlined above and private sector expansion. While deregulation/liberalization issues form only a part of our overall policy strategy, they represent a particularly vital element. For example, the "private sector window" ties directly into the Mission's concerns for enhanced private sector investment in all sectors, including energy supply. Once again, it is important to recall that the ECE program does not carry an isolated and discrete policy dialogue function. Rather, it is one piece of an interrelated policy agenda which encompasses the entire \$1.625 billion six-year ESF program in Pakistan.

2. The Approach at the Sector Level

The key element of the Mission's approach at the sector level is to support the development of both consumer and producer energy pricing which will:

- encourage efficient use of scarce energy resources;
- direct efficient allocation of new investment and resources into energy sector development; and,
- expand the role of the private sector in the development, production and distribution of energy.

This approach is being pursued by activities which:

- strengthen the technical foundations for improving the efficiency of the energy sub-sector;
- support the development of an energy analysis and planning capability which will support GOP efforts to accelerate policy goal achievements;
- assist in the development of indigenous energy resources, most importantly coal, in order to reduce the BOP problems associated with oil imports; and,
- encourage the increased participation of the private sector in energy by means of producer price rationalization and institutional reforms.

Major programs in support of the above objectives include the Energy Planning & Development Project, the Rural Electrification Project, and the Lakhra Coal Mining and Power Generation Project. In undertaking these projects, GOP actions consonant with the policy framework and agenda mentioned above are identified to maximize the developmental impact of A.I.D.'s resources. These objectives and the policies needed to achieve them are grist for the energy policy dialogue.

3. Policy Content of Other Energy Sector Projects

All the USAID/Pakistan energy sector projects include components which relate to the policy dialogue. An important input to the Rural Electrification Project was the development of the "General Policies and Implementation Guideline" report which has been incorporated into WAPDA's five-year plan for rural electrification. This document was prepared by USAID cooperatively with WAPDA and provides the basis for consideration of such critical issues as tariff structures, implementation of energy conservation measures, and the proper assessment of the cost of the distribution system expansion program.

The 5 year Energy Planning and Development Project has several components, each with policy implications. The core of the program is

the establishment of an Energy Planning Cell within the Ministry of Planning and Development. An Energy Policy Board consisting of high level representation from all the energy supply and demand Ministries will have oversight responsibilities for this cell. The formation of this cell will greatly improve energy sector analytical capabilities within the GOP so that the implications of policy options can be clearly demonstrated to policy-makers. This analytical cell and Energy Policy Board are key to policy development and structural reform activities in the GOP. In addition, the EP&D program supports a number of sub-sector policy objectives by:

- emphasizing the increased use of energy conservation measures as an economically viable aspect of needed increases in consumer energy prices;
- providing technical assistance to support better sub-sector project planning and evaluation so that resources are most effectively used and the role of private sector commercialization clearly accounted for; and,
- assessing the extent of indigenous coal resources for use in power generation, industrial conversions, and coal briquetting, by both the private and public sectors (including the Lakhra Project described below).

The ongoing discussions for the Lakhra Coal Power Plant project emphasize the role of the private sector in coal mining. A study will be undertaken by August 1984 to assess the capabilities of the private sector coal mining industry and to identify technical, financial, and institutional issues which should be addressed to ensure a major role of the private sector in providing coal for the Lakhra and other facilities. This project, therefore, provides the GOP and USAID with a valuable framework with which to consider how to expand the private sector's role in the coal mining sector.

The 9-year Forestry Planning and Development (FPD) Project will assist the GOP to reverse the deforestation process and expand the extremely limited forest resource base so it becomes an increasingly important indigenous energy resource. This will be accomplished by strengthening the capacity of indigenous institutions at the federal, provincial and local levels to design, implement and evaluate policies and programs for increasing fuelwood/timber production and demonstrate the economic, technical and social feasibility of producing tree crops on privately owned farms and range lands. The project will directly contribute to the analysis of policy options and identification of dialogue opportunities by assisting the GOP in the establishment of a senior level federal policy advisory committee; the development and implementation of federal and provincial forestry development plans; and the training of forestry planners and economists. Analysis of the importance of forestry in agricultural and rural development and of fuelwood as an energy source is expected to effect significant policy changes. These will include changes in the relative emphasis that the GOP places on managing public forests versus tree production on private lands and in the division of

provincial and federal responsibilities in forestry planning and management.

The ECE Program will reinforce and, in some cases, depend on policy activities of the above USAID programs, as follows:

- The ECE Program focuses on energy conservation to support the development of cohesive energy conservation policies and implementation plans which will be developed as part of the EP&D Project.
- The development of the Energy Policy Board and Energy Planning Cell within the Planning Commission under the EP&D Project will provide the institutional structure to critically select equipment for the public sector under the ECE Program.
- The provision of renewable equipment for field testing and commercial demonstrations will be done consistent with a cohesive testing and private sector commercialization strategy for renewables developed as part of the EP&D project.
- The ECE Program will provide the resources to implement recommendations identified by the Private Sector Coal Mining Study.

4. The Policy Core of the ECE Program

This PAAD makes it quite clear that the ECE Program does not operate in isolation as a policy tool, but serves to amplify and reinforce a complex set of policy discussions which USAID will sustain with the GOP over the coming several years. The sections which follow outline plans and objectives in a number of ECE-specific policy areas and suggest how the Mission will pursue those objectives. They do not, however, promise a specific rate of progress. The Mission will continue to share policy performance reports with Washington on a timely basis and to insure that its annual negotiations on the ECE Program provide opportunities for both the Mission and AID/Washington to assess progress towards objectives in light of the total policy scene in Pakistan. The Mission believes that this is the most effective way to maximize the ECE Program's development, balance of payments, and policy impacts.

a. Energy Pricing Strategy: IBRD/USAID/GOP Collaboration

The ECE Program will provide an additional forum for USAID/Pakistan to carry on its policy dialogue with the GOP on the issue of consumer and producer energy prices. The USAID has formulated an overall strategic objective and specific strategic goals for the major energy products in Pakistan, but we have determined that it makes sense to follow the IBRD's lead in the development of specific tariff proposals and in the establishment of interim benchmarks and targets relating to achievement of the revised tariffs. This section recounts the basic

economic objectives which USAID seeks to achieve in the energy pricing area and outlines the specifics of the joint USAID/World Bank positions on electricity pricing, gas pricing and coal pricing.

Our core concern is, of course, to work with Pakistan on moving towards an energy pricing regime which is optimal in terms of: (i) inducing efficient use of scarce energy resources; (ii) directing efficient allocation of new investment and resources into energy sector development; and, (iii) expanding the private sector's role in the energy sector. It is difficult to imagine a setting in which these would not be the cornerstones of an AID energy pricing strategy. Progress towards this basic goal of an efficient energy price regime will be a complex and multi-year process. It will involve a considerable range of detailed technical analyses of the financial and economic setting of each of Pakistan's major energy sources: oil, natural gas, coal, and hydro power.

The World Bank has taken the lead in supporting this analytic work in the context of its massive energy sector portfolio in Pakistan which will run to some \$500 million over the next four to five years. The Bank has the sub-sectoral expertise in oil, gas, coal and hydro analysis as well as the tariff expertise to pull this analysis together into a cohesive long run sector pricing strategy for Pakistan. USAID participates in a continuous and extensive dialogue with the Bank on energy pricing and all other major energy sector issues. There is considerable complementarity in our portfolios which underpins this dialogue. USAID's ability to finance institutional developments in energy give it the lead in many organizational and management questions in the sector, while the Bank's superior price and tariff expertise position it for the lead role on these issues. Our dialogue builds upon this complementarity, and we have been able to develop a united front on a broad range of institutional and price issues.

On pricing, we share a common set of objectives with the World Bank which are described below.

i. Electricity Pricing

Our common goal is to assist the GOP in moving electricity tariffs to parity with Long Range Marginal Costs (LRMC). We believe that LRMC is the only acceptable basis for a tariff regime which can insure efficient use of electricity and can mobilize adequate resources for the long run development of the power sector. We and the Bank share the view that the level and structure of electricity tariffs in 1984 are not consistent with LRMC. Capacity charges, in particular, are inadequate. This gives rise to excessive peak demands and the unfortunate corollary of load shedding. It also distorts the long run power investment schedule away from base load development towards excessive peak load generation capacity. We and the Bank share the strategic objective of having the GOP achieve LRMC parity by 1990. The Bank intends to develop specific incremental tariff targets for 1985 and 1986. USAID and the Bank will also finance a load research and management study which will provide the financial and economic data base for meaningful calculation of LRMC. This is a case where USAID has taken

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the lead, in close consultation with the Bank, in framing and negotiating the broad terms of reference for analytical work aimed at assisting the GOP in improving controls on cost of service, refining service rates, managing recurrent costs, improving the basis for capital plant valuation and depreciation, and overall refinements in the system of financial management in the electricity sub-sector. The Bank's financing of the WAPDA IV electric power transmission line extension program to complete the national grid system and planned sector lending in energy is keyed to GOP cooperation in these jointly financed initiatives. The cross consultations and complementary policy initiatives characterize the very constructive USAID/Bank relations in this sector. This study is a sine qua non for meaningful tariff reform, and A.I.D. will do what it can to assist the Bank in assuring that the study is completed on a timely basis. Without this study, WAPDA and KESC will continue to use internal financial ratios based upon dubious capital valuations to justify understated generation costs. USAID fully concurs with the LRMC principle and the 1990 target for 100 percent compliance. It will support the Bank in all efforts to help Pakistan achieve that target. We will not introduce alternative pricing principles or covenants which would muddy the waters on this issue. The Bank's principle is clear, correct and feasible within the planned time frame. The World Bank energy team which was recently in Pakistan has asked us to play the role described above.

ii. Natural Gas Pricing

Gas pricing is intrinsically more complex than electricity pricing because: (1) there are unique logistical constraints to optimum distribution; and, (2) there are significant qualitative differences between various gas products which influence end use options. LRMC has not been found to be a sound guide to gas pricing in other countries, and USAID does not believe that it will prove to be so in Pakistan. Rather, we share with the World Bank and senior Pakistani planners the view that the gas pricing regime needs to be pegged to international petroleum, oil and lubricant (POL) prices. There is no question but that the present price regime for gas is too low. Producer prices for new gas fields have proven inadequate to provide the incentives necessary to increase private sector activity in exploration and development of gas fields. The indigenous private sector, in cooperation with international firms, is demonstrably capable of expanding Pakistan's supplies of natural gas. It can do so only when prices are right and when the framework for pricing ensures that they will continue to be right. USAID and the Bank have agreed that our strategy for gas pricing is to encourage the GOP to adopt a pricing formula which is pegged to the border price for fuel oil and is calculated on the basis of BTU equivalency. In other words, a formula in which a given amount of thermal energy from gas would be producer priced at a known percentage of the border price for the amount of fuel oil which would yield that quantum of thermal energy. The formula would have to permit discounts from the base for location, geology and field size. As we know from the U.S. experience, natural gas pricing is far tougher to work out than oil or electricity pricing, but, difficulties notwithstanding, USAID intends to fully support the Bank in its efforts to lead the GOP into the producer price regime outlined above.

On the consumer side, the problems are particularly acute. The present consumer price tariff so favors gas over other fuel sources that it distorts investment patterns and permits non-economic uses of gas in an energy short national economy. The Bank has already reached agreement with the GOP on a consumer price schedule which will move average prices to 66 percent of the border price of fuel oil by 1988. It is clear, however, that this salutary first step will still leave an unacceptable level of relative price distortion in the system. USAID and the Bank agree that the second step in the process is an agreement on a firm schedule for moving from 66 percent of parity in 1988 to 100 percent parity. USAID recognizes the importance of both the principle of parity based consumer prices for natural gas and the importance of realizing full parity through adherence to a firm schedule of planned tariff increases. Such a schedule can begin to influence industrial and commercial users now by giving them a clear picture of the shape of the price curve for gas over the next ten years. It is USAID policy, as in the case of electricity, to look to the gas specialists and the tariff experts in the Bank to play the lead role in implementing this strategy.

iii. Coal Pricing

USAID has a keen interest in coal pricing because of its role in the Lakhra coal-fired generation activity in Pakistan and its leadership in the donor effort to bring private sector coal mining interests into the forefront of the development and operation of the Lakhra coal fields. The coal price situation in Pakistan is quite different from the regimes which obtain in gas and electricity. There is not, in fact, an official price schedule. The small private producers of coal seem content to permit the public sector mining company to be a price leader. The public sector firm has taken the lead in setting a high price which the private sector follows. In an environment where both gas and electricity are underpriced, relative price distortions constrain growth in commercial coal utilization. This low growth in utilization, in turn, constrains investment in new mining capacity. The situation roughly approximates that of cartel pricing, and Pakistan is consequently deprived of full access to an important domestic energy resource. USAID has developed extensive contacts with the private sector coal mining concerns and believes that one important ingredient in a strategy for coal price rationalization is the creation of a more stable and more substantial framework for commercial coal demand. Virtually no long-term supply contracts are let in the coal business in Pakistan, so private investors are loathe to take on the capital costs of mine improvements and expansion. The development of properly managed coal-fired electricity generation plants, operating in a price environment of LRMC electricity prices, will permit efficient contracting on a longer term basis for coal at financially and economically viable prices. The GOP and the World Bank are participating with USAID in a range of coal sector activities designed to: (1) promote private sector investment; (2) improve the efficiency of the sub-sector; (3) more effectively direct the structure of demand for coal; and, (4) improve relative pricing of coal through the price initiatives on gas and electricity outlined above.

To recap, A.I.D.'s overall goal in energy pricing is to support the GOP in moving toward sector-wide prices which are efficient and consistent with international energy prices. We seek both aggregate shifts towards economically efficient prices and changes in relative prices which will reduce and eliminate distortions in energy use and in energy investment. Recognizing the superior technical capacity of the World Bank to design and monitor energy price strategies, it is USAID's policy to use our influence with the Bank to ensure that we and they are pursuing common goals, and to leave the Bank in the leadership role in formulating specific price programs and negotiating specific tariff adjustment schedules. In the next ECE tranche, USAID intends to include specific USAID endorsement of World Bank positions on energy prices, including specific prices and timetables. For our part, we will continue to play the lead role on issues of privatization in the energy sector and on institutional and managerial reforms where USAID's ability to grant finance permits us far wider leeway in packaging appropriate technical assistance in the energy sector. Moreover, the Energy Planning and Development Project is regarded by both the GOP and World Bank as the centerpiece of institutional reform in the energy sector. This perception and our prospective role will assist us to provide leadership in the cited areas of the sector.

b. Private Sector Expansion

The rationalization of energy prices is the most critical input to expanding the role of the private sector in developing Pakistan's energy resources. The ECE Program in addition seeks to reinforce the emphasis on the private sector through the following:

- (1) A significant portion of ECE Program resources will be made available to the Pakistani private sector.
- (2) Support for OGDC relates to those functions (seismic equipment) which are necessary to develop information to attract private sector investments. (This policy was reinforced by a letter from the AID Administrator, Mr. Peter M. McPherson to the Minister of Finance, Mr. Ghulam Ishaq Khan, dated April 12, 1984.)
- (3) Primary support for developing renewable energy technologies will be for the private sector.

IV. PROGRAM DESCRIPTION

A. Program Goal and Purpose

The ECE Program will provide fast disbursing foreign exchange for the importation of equipment and commodities into Pakistan that will contribute to energy production from indigenous resources and to energy conservation to support the GOP's Sixth Five-Year Energy Plan. The proposed level of funding is \$100 million over a period of three years. Benefits of the program include:

- direct mitigation of balance of payment problems by providing foreign exchange for the importation of energy sector equipment and indirectly by the reduced oil imports resulting from the use of this equipment;
- supporting policy objectives of the GOP in such areas as energy conservation and the increased use of indigenous coal and renewable energy resources;
- facilitating the transfer of energy-related technologies to Pakistan; and,
- providing an additional basis for constructive policy discussions with the GOP on such issues as energy pricing and increasing the role of the private sector in energy development.

The ECE Program will, therefore, address most of the important financial and technical issues associated with achieving the goals of the Sixth Five Year Energy Plan which, in turn, are key to achieving the country's overall economic goals.

B. Program Composition

1. Categories of Equipment

Commodities which are likely to be imported under this Program fall into five major categories: (a) energy conservation and fuel conversions; (b) power sector; (c) coal mining and processing; (d) renewable energy; and, (e) oil and gas exploration and development. The importance of these equipment categories to Pakistan's energy sector is discussed in this section. Detailed lists and descriptions of equipment sub-categories are included in Annexes F.2 and F.3.

a. Energy Conservation and Fuel Conversions

A key assumption of the Sixth Plan is that energy conservation measures will be implemented early in the Plan period and will be effective in reducing growth in demand by 10 to 20 percent. Experience in the United States and elsewhere indicates that this is an attainable goal if the needed equipment is available. Energy conservation measures are among the most effective ways to use financial resources, with payback periods of 1 to 3 years being common. Also, the Plan calls for implementing fuel conversions in

selected industries, allowing them to use heavy oil and indigenous coal in place of scarce natural gas supplies.

Commodities in this category eligible for importation under the ECE Program include: (i) heat recovery equipment; (ii) instrumentation and control systems; (iii) insulation materials; (iv) coal handling equipment; (v) steam generation equipment; (vi) furnaces/waste fuel boilers; (vii) high efficiency motors and power factor correction equipment; (viii) cogeneration equipment; (ix) high efficiency lighting; and, (x) energy audit equipment. The goals of the Sixth Plan require that over \$200 million in such conservation and fuel conversion equipment be installed during the Plan period. Much of this equipment will have to be imported. The demand analysis in Section V. indicates that equipment valued on the order of \$80- \$90 million would be procured under the ECE Program. The ECE Program will therefore provide a sizeable portion of the needed foreign exchange for procurement of this important equipment.

b. Power Sector Equipment

Expansion of the power sector is a major thrust of the Sixth Plan, as evidenced by its being allocated approximately three-quarters of the energy sector budget. This is due to the critical impact of electricity on rural development, agricultural production, industrial expansion, and the achievement of social objectives. An important aspect of the power sector program is improving the energy efficiency of generation and distribution since this directly leads to reduced oil imports. The ECE Program will assist in this effort by financing such equipment as: (i) shunt capacitors for reducing the distribution losses associated with the operation of larger motors in irrigation pumping and industry; (ii) replacement parts for gas turbines and steam plants which will allow these facilities to operate under high efficiency conditions; and, (iii) power distribution and tubewell equipment.

The need for such equipment is urgent and has been specifically identified by the Water and Power Development Authority (WAPDA) and the Karachi Electric Supply Corporation (KESC). As indicated in section V, preliminary lists provided by these organizations indicate requirements in excess of \$50 million, and this list could expand as the upgrading requirements of utility facilities become better defined.

c. Coal Mining and Processing Equipment

The Sixth Plan calls for laying the groundwork for the widespread use of coal in power generation, coal briquetting, and industrial conversions, so that coal becomes a major energy resource during the Seventh Plan period and beyond. To support this rapidly expanding use of coal, the Sixth Plan calls for coal mining capacity to triple during the Plan period. The ECE program will provide funding for selected equipment required to implement the appropriate level of mechanization in the mining sector. Such equipment, most of which would have to be imported, could include: (i) pneumatic drills; (ii) ventilation systems; (iii) conveyor systems; and, (iv) hard hats and safety lights. Any coal mining and processing equipment financed by the ECE Program will be in addition to that which may be procured

as part of the proposed Lakhra Coal Mine and Power Generation Project. As indicated in Section V., demand estimates for coal mining equipment indicate requirements valued on the order of \$8 million.

d. Renewable Energy Systems Equipment

The Sixth Plan recognizes that renewable energy resources, such as solar, wind, and small scale hydro, will not make a major contribution to energy balances during the Plan period. The cost and performance of these technologies are, however, improving as the result of large research and development programs in the industrialized nations. Accordingly, the Plan recognizes the importance of developing the technical capabilities to commercialize these technologies in the private sector so that an important role for renewables can be assured in the latter part of the decade. The ECE Program will support Pakistan's growing interest in developing the capability to use and manufacture renewable technologies.

Equipment in this area could include that used in the GOP field test program as well as components and materials for Pakistani private sector firms manufacturing equipment and commercializing these technologies. This equipment category includes: (i) photovoltaic panels, materials and manufacturing equipment; (ii) specialized materials for solar water heater fabrications; (iii) wind pumps and generators; and, (iv) specialized generators and controls for small scale hydro. As indicated in Section V., demand estimates for this type of equipment are in the range of \$10--\$12 million. The use of ECE Program funds to accelerate the introduction of these technologies into Pakistani industry could help Pakistan become a regional leader in their manufacture and use.

e. Oil and Gas Sector Equipment

The Sixth Plan requires a large expansion of private sector participation in this sector if projected increases in oil and gas production are to occur. The proposed ECE Program will support these important objectives by providing seismic equipment, software, and associated peripherals to the Oil and Gas Development Corporation (OGDC) to improve its capability to define geological potential and thereby improve the information needed in tender documents to attract private sector capital for oil and gas exploration and development. Based on the demand analyses in Section V., the requirements for this type of equipment are valued in the range of \$16 - \$17 million.

2. Public Sector Program

a. Participating Organizations

The government organizations which will be eligible to participate in the ECE Program are those with direct responsibilities in the development of energy resources. These include: (i) WAPDA and KESC in the Ministry of Water and Power; (ii) OGDC, DGER, and PMDC in the Ministry of Petroleum and Natural Resources; and, (iii) ATDO in the Ministry of Science and Technology. In addition, the approximately 70 public sector companies operating within the Ministry of Production will have access to ECE Program resources.

b. Selection Procedure

The selection of equipment to be procured under the ECE Program for government agencies and autonomous organizations will be made on an annual basis by an Equipment Selection Committee functioning under the Energy Policy Board. The latter has been established under the Ministry of Planning and Development to coordinate the EP&D Project. This arrangement will provide a direct link between the ECE Program and EP&D Project and will ensure that the equipment selected is consistent with GOP and USAID energy sector objectives. Selection will be guided by the illustrative list of eligible equipment shown in Annex F.2. Equipment which is not on the list may be funded, provided it supports and is consistent with the objectives of the GOP's Sixth Five-Year Plan (See Annex F.1.).

In FY 1984, the only targeting will be a private/public sector split of \$10 million each, with primary focus on energy conservation. Based upon program experience and other considerations, decisions on whether targeting should have a different private/public sector split or be modified to include specific energy sub-sectors and types of commodities will be made for FY 1985 and FY 1986.

3. Private Sector Program

a. Rationale

The GOP, in its Sixth Five-Year Plan, emphasizes the need for an expanded role by the private sector to meet its development objectives. To assist the GOP to implement this policy, the Mission proposes to make some ECE Program loan funds available to the Pakistani private sector for importation of energy sector commodities and equipment. An initial tranche of \$10 million for this program component is considered adequate in the FY 1984 Program to test demand and evaluate implementation arrangements. Depending upon experience in the first year, decisions will be made as to future public/private sector allocations and the procedures to be followed in disbursing ECE Program funds.

b. Objectives

The primary objectives of the private sector CIP are to:

- provide fast disbursing assistance for balance of payments support;
- increase participation by the Pakistani private sector in activities important for the country's economic development; and,
- promote increased energy efficiency in private sector industries and increased participation of the private sector in the development and exploration of hydrocarbon and renewable energy resources.

c. Program Characteristics

The private sector component is likely to have the following characteristics:

i. Eligible Commodities

It is anticipated that most of the equipment and commodities under this Program will fall under Schedule 6 of the A.I.D. Commodity Eligibility List. Commodities prohibited for import by the GOP will not be eligible. Participating banks will be required to assure that imports under this CIP can be justified as contributing to energy sector activities, are listed as eligible items in Schedule 6 of the A.I.D. Commodity Eligibility List, and comply with GOP regulations regarding eligible commodities for importation into Pakistan.

The imports likely to be financed under this Program fall within the following general categories of commodities:

- equipment or commodities required to increase the energy efficiency of industrial plants or of products produced in Pakistan. Such equipment includes heat recovery units, high efficiency boilers, instrumentation and control systems, and high efficiency lighting systems;
- coal mining equipment such as diesel generators, ventilation systems, pneumatic drills, and safety hats;
- power unit upgrading equipment such as hot end rotor assemblies for gas turbines, fuel processing equipment, and economizers;
- line loss reduction and monitoring equipment such as shunt capacitors and three phase meters;
- equipment associated with the use or manufacture of photovoltaic, solar water heating, biomass, wind, and small scale hydro technologies; and,
- seismic equipment and related software for use in defining oil and gas prospects.

Annex F.2. provides an illustrative list of equipment in the above categories. USAID/Pakistan will work with the GOP Equipment Selection Committee in periodically updating this list based on the changing needs of both the public and private sectors.

ii. Eligible Importers

All Pakistani privately-owned companies will be eligible to participate in this program. Specifically, the program will be open to privately-owned firms in the following categories: manufacturers; processors; distributors and transporters; importers; traders; and, licensed agents and stockists. Distributors, traders, importers, licensed agents and

stockists will be treated on an equal footing with the various categories of end users. The issue of defining "private ownership" will be dealt with in guidelines to be provided to the participating banks. Should questionable cases arise, they will be considered by the appropriate GOP agencies in consultation with USAID. The guiding principles which will be used in determining eligibility will be that:

- (1) all or most of the company equity is held by private non-governmental persons or corporations; and,
- (2) corporate control, both at the board level and at the operating level, is completely or largely in private hands.

The reasons for not requiring 100 percent private equity and management lie in the fact that the major public sector investment institutions (life insurance companies, government mutual funds, and the like) often buy shares of private firms on the capital market. Also, as a condition for receiving long-term credit from the public sector financial intermediaries, firms are sometimes required to accept on their boards a nominee of the lending agency. It is, however, the objective of the program to provide these funds only to firms which are, to all intents and purposes, private in ownership and in management. In no case will firms with less than majority private equity or management be eligible to borrow funds. Previously private firms which were nationalized will be ineligible as will firms which are organized as "semi-autonomous organizations" with Government of Pakistan capitalization and oversight.

iii. Eligible Banks

Consideration is being given to participation by U.S. banks. This matter is under negotiation with the GOP. Allocations of funds made by the State Bank of Pakistan to participating banks should be additional to their established credit ceilings and should be made to these banks on a first-come, first-served basis.

iv. Suggested Maximum and Minimum Loan Transactions

- (1) Maximum : \$1,000,000
- (2) Minimum : \$ 25,000 (with the exception of spare parts for on-hand equipment)

Loan transactions of more than \$1,000,000 must be jointly approved by the Equipment Selection Committee and USAID.

v. Interest Rates and Lending Conditions

The Government of Pakistan's Ministry of Finance issues regulations which govern the relending terms for "foreign loans and credits". (See Annex A.) The ECE private sector "window" falls into a category titled by the GOP as "Foreign Loan Relent to Financial Institutions", for which the terms are specified as follows:

- (1) GOP relends to Financial Intermediary: at 8 percent plus a 3 percent charge for foreign exchange risk cover.
- (2) Financial Intermediary lends to Final Borrower: at 11 percent plus 3 percent pass through of foreign exchange risk cover charge from GOP. "If as a result of a higher spread demanded by the creditors, the interest rate to the final borrower exceeds 14 percent per annum, the excess will be passed on to the final borrower".

Operating within this framework, which the GOP applies to all relending of foreign assistance through financial intermediaries, the initial terms for ECE loans will be as follows:

- Amount: \$10 million in first year
- Borrower: Islamic Republic of Pakistan
- On-Lenders: Commercial Banks in Pakistan
- Terms of A.I.D. Loan to GOP: Standard 40 year A.I.D. loan with 2 percent interest rate during 10 year grace period and 3 percent interest rate for remaining 30 years. Repayment in U.S. dollars.
- Terms of Reloan: The Government of Pakistan would relend the proceeds of the concessional loan to the intermediate lenders on terms which would provide a 3 percent to 4 percent spread to the intermediate lenders within the current foreign exchange lending rates and local currency lending rates prevailing in Pakistan. Rupee loans where borrowers assume the foreign exchange risk in the transaction would be at 11 percent and foreign exchange loans where the GOP insures the foreign exchange risk at the current 3 percent premium would be at 14 percent.
- Repayment of Reloan to GOP: The participating commercial banks serving as intermediaries would repay their loans to the GOP on the basis of the actual amortization schedule of each sub-loan. Sub-loans would have a schedule of eighteen months to three years, i.e., 18 months for intermediate goods and 36 months for capital goods and equipment. The GOP would bear the foreign exchange risk and interest rate risk, subject to provisions for a 3 percent charge to

borrowers for the foreign exchange cover. Sub-loans would be at interest rates fixed at the time of the loan.

Conditions of Sub-Loans:

The energy sector equipment sub-loans would be for U.S. source and origin commodities on a mutually agreed schedule. U.S.-financed shipping would be on U.S. or Pakistani bottoms. Non-U.S. financed shipping would be on bottoms of the borrower's choice. Duties and excise would be payable by the borrower in accordance with GOP regulations in effect at the time of the transaction, but would not be financed by the U.S.-provided sub-loan. U.S. banking charges would be eligible for financing from the U.S. sub-loan. Banking charges levied in Pakistan would be the responsibility of the sub-borrower and would not be eligible for U.S. financing.

Monitoring:

The participating banks in Pakistan would be required to provide periodic reports of loan transactions to USAID/Pakistan and to the GOP Energy Policy Board. USAID/Pakistan would retain the right to audit sub-lending operations and to require repayment of loans made in violation of the terms of the Program Agreement.

V. TECHNICAL ANALYSES

A. Methodology

Figures on actual equipment imports are not sufficiently broken down into specific categories to base demand projectors on past import trends. Therefore, the general approach used to estimate equipment demand was to:

- review the probable equipment needs required to meet the objectives of the GOP's Sixth Five-Year Energy Plan;
- meet with key individuals in government organizations and public and private sector companies to discuss their energy equipment needs;
- evaluate the competitive position of U.S. products in various equipment categories;
- review GOP import regulations to identify equipment categories negatively affected; and,
- quantify the economic performance of equipment types to relate demand to existing and future energy costs.

The results of these reviews and analyses are discussed in detail in the April 1984 Energy Commodity and Equipment Program For Pakistan report on file in USAID/Pakistan and are summarized below.

1. Public Sector Demand

The equipment needs of WAPDA, KESC, OGDC and DGER are well defined. These organizations provided lists of specific equipment they would likely request under the ECE Program. They will undoubtedly expand this list in subsequent years once the Program is established. Even the preliminary lists provided by these public sector organizations exceeded \$100 million. Equipment demand from the public sector companies, which fall under the Ministry of Production, was estimated by the procedure used to estimate private sector demand.

2. Private Sector Demand

Estimating the potential demand for ECE Program resources by the private sector is complicated by a number of factors including:

- the large number of decision-makers involved;
- the sensitivity of purchasing decisions to economic payback which is dependent on internal energy prices, equipment costs, and financing terms;
- the uncertainty as to government policies and programs in such areas as coal utilization and energy conservation; and,

- the cost, applicability, and brand name recognition of U.S. equipment in the Pakistani market as compared with equipment from several competitive countries.

The primary demand under the ECE program by the private sector will be for energy conservation equipment to increase the efficiency of industrial and commercial energy use. Demand for ECE Program resources could also develop for renewable energy equipment, selected coal mining equipment and oil/gas resource assessment equipment. The general approach used to determine demand for ECE Program resources by the private sector for all equipment categories was to estimate:

- the equipment import needs required to meet the objectives of the Sixth Five-Year Energy Plan. It is recognized that in many cases, the objectives of the Sixth Plan will probably not, in practice, be fully achieved. However, particularly for the ambitious energy conservation goals, the Sixth Plan provides a useful benchmark with which to compare more realistic equipment purchase estimates;
- the actual equipment imports which might realistically occur as indicated by field interviews and discussions with local expertise; and,
- the percentage of energy sector equipment imports which might be purchased from U.S. firms, particularly if a line of credit is established via the ECE Program.

B. Demand Analyses

1. Demand for Energy Equipment in Pakistan

Based on meetings with the Ministries, public and private sector companies, equipment demand was first qualitatively assessed. The indigenous supply of energy equipment was reviewed to determine if equipment demand would result in imports or simply stimulate the manufacture of equipment in-country. In addition, equipment operation and maintenance capability was analyzed as it affects overall equipment demand. Even if certain energy conservation equipment had vast potential for energy savings, a poor operation and maintenance track record in Pakistan could limit demand. The following sections summarize these assessments for the major equipment categories.

a. Energy Conservation Equipment

There is an immediate demand for instrumentation systems, insulation materials, new steam generation equipment, high efficiency motors and power factor correction equipment. There is also a large latent demand for heat recovery equipment, coal handling equipment, direct heating equipment, cogeneration systems and high efficiency lighting which will materialize in the next three years as the majority of Pakistan's industry becomes increasingly aware of energy conservation practice. Both public and private sector industry have a rapidly growing

interest in energy conservation and fuel substitution equipment. Overall demand for this equipment must grow rapidly for even a partial realization of the energy conservation/fuel substitution goals of the Sixth Five-Year Plan. The demand estimates for energy conservation equipment in this PAAD are based on the estimated amounts of equipment expenditures required to meet 60 percent of the target goals of the Sixth Five-Year Plan.

Manufacture of energy conservation/fuel substitution equipment is limited in Pakistan because of the low demand for this equipment. One public sector company, Heavy Mechanical Complex, manufactures burners and heat exchangers but not to the specifications required for high efficiency equipment. There are no high effectiveness insulation or instrumentation and monitoring systems in Pakistan. Electric motors under 50 hp are manufactured by Pakistani companies but do not meet energy efficient standards. Electric motors above 50 hp are not made in Pakistan. Unavailability of local materials such as high quality copper for windings, special plastics and phenolics has prevented energy efficient electric furnaces from being manufactured in Pakistan. Pakistan has the ability to maintain mechanical and pneumatic equipment. There should be no obstacles associated with maintenance of this equipment with the exception of electronically based instrumentation and monitoring systems. Indigenous expertise in the maintenance of electronic and microprocessor based equipment needs to be developed.

b. Power Sector Equipment

Due to the rapid expansion of the distribution system, there are extensive problems associated with high line losses, poor power factors on the motors, and inaccurate metering. For example, WAPDA estimates a need for 50,000 three phase meters and 13,000 shunt capacitors annually over the next 5 years. Requirements for similar equipment in this area are considerable in view of the well recognized efficiency problems in electricity distribution. The upgrading and rehabilitation of existing thermal power plants is assigned high priority within WAPDA and KESC. This activity is complicated by the highly varied mix of equipment from all over the world. The equipment under consideration is also high in priority since equipment is now required to be maintained so it can operate at design conditions. The demand for equipment may increase greatly if actual system improvements are required, such as converting some of the gas turbines to combined cycle operation.

The verification that equipment meets performance standards and the rehabilitation of critical aged equipment are essential elements of a program to improve the efficiency of the electricity generation and distribution system. In recognition of this, both WAPDA and KESC are in the process of upgrading their testing and repair facilities which will necessitate importing specialized equipment in this category.

Some meters and capacitors are manufactured in Pakistan. However, the capacities and types being considered under the ECE Program are not yet manufactured indigenously and may not be in the near future due to relatively limited demand (from a manufacturing economies of scale viewpoint). Similarly, specialized line loss monitoring equipment and

modern connectors are not available from Pakistani manufacturers.

The types of equipment required for power unit upgrading and maintenance, equipment testing, and rehabilitation are highly specialized and made by only a few companies in the world. No equipment of this type is made in Pakistan.

Most of the equipment in this category is already in widespread use in Pakistan and operated effectively by WAPDA and KESC staff. The fuel upgrade equipment, in fact, is being considered to reduce operation and maintenance problems associated with converting power units from natural gas to high speed diesel or fuel oil.

c. Coal Mining Equipment

The current demand for coal mining equipment is minimal since few of the mines have any significant degree of mechanization or safety measures. This is due to several factors including:

- the low level of coal demand which provides no incentive to utilize capital in order to mechanize;
- the lack of grid supplied electric power which complicates introducing even rudimentary mechanization as safety measures; and,
- a highly fragmented coal industry with most individual mines being relatively small.

Discussions with several mining companies indicated, however, a growing interest in introducing modest levels of mechanization. This interest stems from the belief that coal demand will increase as a result of increased use by selected industries, coal briquetting, and the Lakhra coal fired power plant. Since there has been little demand, there is minimal manufacture of coal mining mechanization or safety equipment in Pakistan. Such equipment, therefore, will have to be imported.

Diesel generators, preventive equipment and ventilation systems are used in Pakistan for non-coal mining applications. However, the effective application of such equipment in the mines will require special training for mine management and operating personnel. Such training could either be provided by the suppliers or possibly under the EP&D Project.

d. Renewable Energy Equipment

The current demand for photovoltaic wind pumps/generators and solar water heating systems is primarily the result of DGER demonstration programs. The DGER segment of the village electrification program will represent a major portion of the demand for photovoltaic systems (roughly 6000 KW). Annual demand could increase to several megawatts if anticipated cost reductions occur. The demand for wind pumps will be under several hundred units per year unless several

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regions of abnormally high wind regimes are identified. The present demand for solar water heating systems is small; however, experience in other developing countries indicates that the demand should be on the order of ten thousand units per year. The present demand for mini-hydro units results from the ATDO demonstration program. The ATDO has installed 40 mini-hydro units and has requests for an additional 40 units. It has made preliminary demand estimates of approximately 750 mini-hydro systems (5-10MW) and 100 medium capacity hydro systems (10-100MW).

Photovoltaic panels and wind equipment are not currently manufactured in Pakistan. The capability does exist to manufacture wind equipment and several local firms may enter the business if sufficient demand is developed as a result of the current demonstrations. Private sector firms in Pakistan are presently having discussions with European firms for assembling and manufacturing photovoltaic panels. The prospect of manufacturing photovoltaic panels in Pakistan, however, is uncertain given the risks associated with the dynamic nature of the technology.

There is some experience in manufacturing solar water heaters and components of small hydro units. Small companies have supplied solar water heaters to the DGER demonstration program, but these units are not commercially engineered and their reliability and performance are questionable. Several of these companies are negotiating with foreign companies to manufacture solar collectors in Pakistan as part of a joint venture or lease agreement. Small pelton wheels for mini-hydro units are manufactured locally using designs developed by ATDO; however, no generators are manufactured to match the capacity for either the mini-hydro or larger capacity systems.

If Pakistan develops the capability to manufacture solar water heating and hydro equipment, the industry would initially rely on imports of crucial material components such as relative absorbing coatings, high performance insulators, special gaskets for solar systems and generators, complete turbines and controls for the medium size hydro units.

Properly designed photovoltaic power units, solar water heaters, and mini-hydro systems are highly reliable and require a minimum of maintenance. Tradesmen with modest training have operated and maintained these systems in Pakistan and other developing countries. Although wind equipment and medium size hydro systems require more sophisticated maintenance, acquiring these skills through proper training should present no major obstacles in Pakistan.

e. Oil and Gas Equipment

Seismic work is highly important. It is common for less developed countries to acquire their own seismic information as a means of promoting exploration. However, this work is often undertaken by private companies as part of their exploratory efforts. OGDC's requirement for equipment for 4500 km of seismic shootings valued at \$12 million would supplement World Bank funded seismic efforts and would help Pakistan complete a 15 x 15 km reconnaissance seismic grid of all geologically interesting areas. To date, only about 30,000 km out of a

potential total of 65,000 km have been completed.

Pakistan's long-term energy strategy is dependent upon establishing whether its economic reserves of natural gas approach their estimated potential of 15 TCF. The only way this can be determined is by the drilling of exploratory wells. Given the low probability of attracting private companies without some further successes, the OGDC is an appropriate body to undertake exploratory drilling.

Seismic equipment is only manufactured by some half dozen companies worldwide. Pakistan must therefore procure this equipment from one of these companies. Exploratory drilling rigs are not manufactured in Pakistan, and this situation will not change over the three years of the ECE Program.

The OGDC is capable of using this equipment. Their seismic work is judged to be the most effective of all its functions. Moreover OGDC crews would be best suited for operating in some of the more remote areas of Pakistan. Since the World Bank is funding the acquisition of a computer for processing the seismic data in the OGDC's headquarters in Islamabad, the OGDC would be able to process seismic data efficiently.

2. Equipment Demand Estimates

Table 2 summarizes the estimated demand for the major categories of energy sector equipment under the ECE Program. A more detailed breakdown of the demand estimates of equipment subcategories is included in Annex F.5. Total demand for U.S supplied equipment is estimated at \$170 million over three years. Overall demand for energy sector equipment, however, will probably be considerably in excess of this magnitude. For example, the purchase of energy conservation equipment alone could be in excess of \$150 million. However, only about \$87 million is included as projected demand under the ECE Program, after taking into account a variety of competitive and other considerations.

The single largest equipment category would support the energy conservation program in both public and private sector industries. Energy conservation equipment constitutes over 75 percent of the estimated private sector demand under the three-year ECE Program. The relatively modest demand for coal mining and renewable equipment reflects, in part, the present stage of development and the time required before coal mining programs and GOP policies are more specifically defined. It is expected, however, that demand in these sectors could increase rapidly in subsequent years as coal and renewable resources are given more emphasis and specific policies and programs to encourage their use are implemented.

The oil and gas sector is of great importance in Pakistan. The relatively modest equipment demand indicated for this sector reflects the fact that other donors such as the World Bank and CIDA already have substantial programs in this sector.

The single largest demand for ECE program resources in the public sector is likely to be in the electric power sector. This sector is critical to the Pakistani economy, and its equipment needs are large. Equipment needs

TABLE 2

EQUIPMENT DEMAND ESTIMATES UNDER THE ECE PROGRAM

(In \$ 000)

<u>EQUIPMENT CATEGORY</u>	<u>YEAR 1</u>		<u>YEAR 2</u>		<u>YEAR 3</u>		<u>TOTAL</u>	
	<u>PUBLIC</u>	<u>PRIVATE</u>	<u>PUBLIC</u>	<u>PRIVATE</u>	<u>PUBLIC</u>	<u>PRIVATE</u>	<u>PUBLIC</u>	<u>PRIVATE</u>
Energy Conservation and Fuel Substitution	8,500	12,500	11,500	17,000	16,000	20,000	36,000	49,500
Power	18,000	-	17,000	-	16,000	-	51,000	
Coal Mining	-	500	-	2,700	-	4,900	-	8,100
Oil and Gas	4,500	-	4,500	1,000	4,500	2,000	13,500	3,000
Renewables	2,600	400	1,900	1,400	1,900	2,900	6,400	4,700
TOTAL:	33,600	13,400	34,900	22,100	38,400	29,800	106,900	65,300
GRAND TOTALS	47,000		57,000		68,200		172,200	

in this area include those required to improve the efficiency of the distribution system (such as shunt capacitors) and to upgrade existing power generation units (such as turbine rotors and economizers). Such equipment for existing facilities is usually not included in donor-funded projects.

C. Equipment Suitability and Priority

The Sixth Five-Year Plan sets as one of its goals a reduction in commercial fuel consumption of 9 percent as the result of more efficient energy utilization. This goal is one of Pakistan's top energy sector priorities. Approximately one-half of the Plan's proposed conservation measures will require the use of equipment that is not currently available in Pakistan. By providing the resources to import this equipment, the ECE Program will also stimulate private sector involvement since over one-half of the equipment requirements is in the private sector. Energy conservation has a direct impact on reducing Pakistan's balance of payment burden (resulting from imported fuel oil) by enabling less energy intensive economic growth. The inclusion of energy conservation/fuel substitution equipment therefore supports both GOP objectives to stimulate the private sector and to reduce Pakistan's dependence on imported oil.

The power distribution equipment will contribute directly to reduced electric power consumption and losses. This will, in turn, directly reduce primary energy consumption in thermal power plants which are increasingly based on imported fuel oil. Previous analyses, such as provided in the Rural Electrification Project Paper, indicate the excellent economics of such measures. Similarly, the upgrading of the power units will directly reduce the consumption of fuel oil, high speed diesel, and natural gas per unit output. Such programs are an essential element in an overall strategy to reduce fuel imports.

The Sixth Plan requires that coal mining output increase by three-fold over the Plan period to satisfy the expected increase in use of coal in industry, power, and briquetting. The introduction of coal mechanization and safety equipment for private sector miners will also assist the GOP to meet its energy sector targets.

Photovoltaic power units can be justified for use in Pakistan and for support under the ECE Program on several grounds: (1) they would support private sector expansion in the energy sector, reduce consumption of gas and oil, and support development in rural areas; (2) technical and market analyses indicate their use could become widespread as their cost declines; (3) there is a high level of interest by domestic manufacturers in commercializing this technology; and, (4) there is an on-going effort in Pakistan which could benefit from the ECE Program.

Small scale hydro units can serve basic power needs of the northern mountains which may never be grid-connected. These regions are of particular social and political importance to the development of Pakistan.

Solar water heaters can be used to displace gas and oil in many energy use sectors. They can be readily manufactured in Pakistan and could form the

basis of additional private sector participation in the economy.

Wind pumps could be used to substitute for small engine driven pumps, thereby directly displacing oil. Wind generators could provide minimal power needs for remote regions which could not be economically served by the grid. Both types of systems contribute to rural development and could be manufactured in Pakistan. An additional incentive is the potential for a more significant role for wind power, should the existence of areas with relatively high wind regimes be verified by wind monitoring programs.

The Sixth Plan requires that oil supplies increase by 62 percent over the Plan period. The ECE Program funded equipment will assist in better characterizing the geological prospects of Pakistani fields to support development of indigenous energy sources. In addition, if the geological prospects are favorable, further private sector involvement would be stimulated. Both these accomplishments would help the GOP to achieve its objectives of increasing the role of the private sector in oil and gas development and in developing indigenous energy sources to reduce the burden of foreign imports.

This section demonstrated that in terms of demand, the proposed program is feasible and that the indicated equipment presents no technical, management or maintenance obstacles. It is also evident that the equipment would be directed at mitigating serious balance of payments problems and would help the GOP to achieve high priority energy sector goals.

D. Private Sector CIP

1. Background

The private sector "window" in the ECE Program would strengthen USAID's overall support to the Sixth Five-Year Plan goal of enhanced private sector activity in Pakistan. The Pakistan private sector is currently concentrated in secondary metal processing, brick and ceramics, textiles, sugar, and food processing. Almost 50% of Pakistan's energy consumption is for private sector industries; accordingly access of the private sector to ECE Program resources is essential to achieving the GOP's goals in the field of energy conservation.

The Sixth Five-Year Plan recognizes the importance of an expanding private sector in achieving overall development goals. It gives particular emphasis to the role of the private sector in providing capital for energy resource development and the need to improve the energy efficiency of private sector industry.

The private sector CIP will, therefore, be operating within a constructive public policy environment which is likely to increase private sector confidence, investment and output.

2. Demand for U.S. Energy Commodities

The private sector "window" of the ECE Program will permit importation of a broad range of energy sector equipment. Almost all industries in Pakistan would, in principle, have need for equipment eligible for purchase under this program which ensures the program a broad market base. Participating banks will review equipment financing requests against three screens: (a) the GOP eligible list of imports, which is very broad; (b) the A.I.D. eligible commodities list which is also very broad; and, (c) the narrative justification in the loan application which explains how the equipment is consistent with the eligibility criteria and how it supports the objectives of the Sixth Plan.

Within this framework, it is likely that very substantial market demand for commodities can be tapped by the private sector "window" in the ECE Program. The U.S. enjoys a reputation for technological supremacy in many areas of energy sector equipment including process control equipment, energy management systems, oil and gas sector exploration equipment, high efficiency compressors, coal mining equipment, and advanced renewable energy technologies such as photovoltaics. In other areas such as heat recovery equipment and cogeneration systems, U.S. manufacturers are still technologically competitive but often suffer from higher costs due, in part, to high transportation costs.

The effective demand for U.S. equipment will reflect a balancing of three factors: (a) technological advantage of U.S.-supplied equipment; (b) quality advantages of U.S. equipment; and, (c) price competitiveness of U.S. equipment.

Demand estimates (see section V) are vulnerable to the vagaries of a dynamic market place. Therefore, during the first year of the program, the Mission will test the market with a phased approach to credit availability. The FY 1984 ECE Program will make US \$10 million available through banks to the full universe of private sector borrowers. Based on the actual track record of this initial \$10 million tranche, decisions as to the distribution of private and public sector tranches will be made.

3. Relationship of Loan Terms to "Market Interest Rates"

Any discussion of "prevailing market rates of interest" in Pakistan must be prefaced by the statement that interest rates are not a significant instrument for regulating the growth and distribution of domestic credit. Direct and selective credit controls such as annual credit plans are the GOP's preferred monetary tool. The State Bank of Pakistan (i.e., the Central Bank) sets minimum rates for deposits and maximum rates on advances. Although banks are theoretically free to pay higher rates for deposits and charge lower rates for advances, the crossing nature of the interest rate structure (interest rates for deposits rise with maturity while those for advances decline) and the relatively low rate of return available from Government securities used to meet minimum reserve requirements combine to work against much deviation from the prescribed rates and to encourage short-term quick-turnover transactions.

In the private sector "window" of the ECE Program, the approach to the interest rate issue is built upon four pillars:

- a. the avoidance of misallocation of investment through wrongly priced capital;
- b. an approach to capital pricing which incorporates both the explicit and implicit costs of capital to the borrower (i.e., nominal interest rate, local and foreign banking fees for documentary credits, cost of foreign exchange cover, compensating balance and other side-requirements, costs of U.S.-tied procurement, cost of A.I.D. shipping regulations, and the like);
- c. a desire to work within the existing credit system to the maximum extent possible, recognizing that neither the participating banks nor the GOP will revise the structure of the credit markets simply to accommodate the private sector commodity "window"; and,
- d. a recognition that all the banks in the system (both the Central Bank as recipient of the A.I.D. loan in the first instance and the implementing commercial banks as co-lenders in the two-step loan process) will have to receive sufficient spread to cover the commercial and business risks which they undertake as well as their overheads in operating the program.

The foregoing approach parallels the handling of interest rates in the FY 1984 Agricultural Commodities and Equipment PAAD Amendment, which was approved by the APAC in June 1984. Moreover, it reflects and follows guidelines proposed by the ECE PID review (See Annex A.) Finally, refer to Annex A for the Mission's discussion of the compatibility of the proposed approach with "market interest rates" in Pakistan.

VI. IMPLEMENTATION PLAN

The ECE Program will provide funds to both public and private sector organizations. The Program will assist both sectors to improve the efficiency of energy use and expand indigenous energy resources in Pakistan. Despite the congruence of purposes, disbursement procedures will differ between the public and private sectors.

A. Procurement Plan

1. Public Sector Commodities

a. Public Sector Agencies

i. Participating Organizations

The organizations which will be eligible to participate in the ECE Program are those with direct responsibilities in the development of energy resources. These include: (1) WAPDA and KESC in the Ministry of Water and Power; (2) OGDC, DGER, GSP, and PMDC in the Ministry of Petroleum and Natural Resources; and, (3) ATDO in the Ministry of Science and Technology.

ii. Equipment Categories

The eligibility criteria for equipment to be imported under the ECE Program are provided in Annex F.1, and an illustrative list of eligible equipment is provided in Annex F.2. Several public sector agencies such as WAPDA and OGDC have already provided preliminary lists of equipment which are reflected in the illustrative list of eligible equipment.

iii. Selection Process

The equipment needs of the Government ministries will probably exceed planned ECE Program resources over the next 3 years. As a practical matter, therefore, a procedure must be established to enable the GOP to select the equipment to be imported under the ECE Program. This procedure is likely to be as follows:

- Each year eligible government organizations will submit to the Energy Policy Board lists of equipment they wish to purchase under the ECE Program. These lists will include the estimated dollar value of the equipment and the rationale for its purchase under the ECE Program, i.e., consistency with the eligibility criteria indicated in Annex F.1.
- The requests will be reviewed by an Equipment Selection Committee established within the Energy Policy Board, in consultation with USAID.

iv. Procurement Mechanism

Many of the Government organizations which will utilize program resources have extensive experience in international procurements. These organizations will be responsible for procuring the equipment directly using A.I.D. procedures for host country contracting and procurement. This will include preparing specifications, preparing and issuing tenders, making awards, and handling all communications with suppliers regarding shipping and insurance claims as well as clearance of commodities at the Karachi port and inland transportation arrangements.

For those organizations with limited exposure to international tendering, awards will take place at the Pakistan Embassy in Washington, D.C. with the assistance of SER/COM, AID/Washington. Although not now contemplated, Procurement Services Agents (PSA's) under host country contracts may be used, depending on the nature and amount of items involved. In addition, the services of equipment or specification writing specialists may also be procured under this program.

b. Public Sector Companies

The public sector companies usually finance their equipment purchases through the National Development Finance Corporation (NDFC) or the development banks. However, they are increasingly making use of the commercial banking sector for working capital loans or to finance modest-size equipment purchases. This program will encourage that trend. When the Energy Policy Board determines an allocation for the public sector companies, this allocation will be made available by means of a line of credit established in commercial banks. Access to these resources and associated terms will be the same as described for the private sector in section d. below.

2. Private Sector Window

a. CIP Setting

Funds provided under the private sector CIP will be made available to participating commercial banks in Pakistan. The participating banks will be responsible for ensuring that their customers purchase only eligible commodities which will contribute to energy efficiency and the increased use of indigenous energy resources in Pakistan. They will also be responsible for ensuring that the equipment and commodities are purchased in accordance with AID and GOP regulations and shall also comply with reporting requirements. The Energy Policy Board and USAID/Pakistan will monitor performance.

b. Past Experience

Loans to the private sector have been made for some time by other donors. Large contributors have been the World Bank and the Asian Development Bank. In addition, many countries have provided lines of credit, both general and sector-specific, to the private sector.

The World Bank, over the past few years, has made available 14 loans and credits totalling US\$ 454 million for project investment in the private industrial (manufacturing) sector. Of this, US\$ 274 million has gone to the Pakistan Industrial Credit and Investment Corporation (PICIC) and US\$ 80 million to the Industrial Development Bank of Pakistan (IDBP) for term loans. In February 1984, the World Bank extended an additional US\$ 100 million loan to finance activities in the private industrial sector.

The Asian Development Bank has provided US\$ 198 million in loan funds to the private sector via public sector lending agencies. Currently, the ADB is interested in expanding its level of activity in this area and is investigating ways to make funds directly available to private firms.

As a result of these efforts, precedents have been established which provide the general basis for foreign loans and a useful framework for the proposed ECE Program private sector CIP. While each donor loan has specific implementation procedures, most follow the general pattern described below. Donor funds are loaned to the GOP on negotiated terms and conditions; these loans are transferred directly by the GOP or State Bank of Pakistan (SBP) to Designated Financial Institutions (DFIs) or Nationalized Commercial Banks (NCBs).

The DFIs and NCBs act as the implementing agents of the loans, conducting project appraisals, reviewing borrower credit worthiness and are responsible for placing the funds and for repaying the loans to the GOP. Therefore, it is from the DFIs and NCBs that the private sector investor obtains his funds and to whom he is responsible for repayment of his loan.

In addition to providing funding, World Bank and Asian Development Bank loans are also used to assist in strengthening the financial system. For example, the recently signed World Bank loan has the following objectives:

- improve credit delivery for industrial finance by focusing on the system as well as the individual;
- reduce the possibility of jeopardizing industry's access to term finance as a result of a participating institution's non-compliance with conditionality/eligibility criteria by expanding the sources of financing;
- remove operating anomalies which hamper competition among DFIs;
- encourage competition among Participating Financing Institutions (PFIs) by expanding and improving the services offered by them;
- strengthen individual institutions through technical assistance programs; and,
- develop a more consistent and continuous method of providing foreign exchange financing for industry in Pakistan.

Each donor loan has specific terms and conditions regarding the use of the loan; lending interest rates and repayment terms; foreign exchange risk responsibility; and, loan limits and criteria which must be met before loan funds can be used.

c. Procurement Plan

The DFI's will be allowed to make loans for the purchase of eligible equipment. If a borrower desires to purchase equipment not on this list, the request will have to be evaluated in light of the criteria indicated in Annex F.1. The DFI's may request assistance from the Energy Policy Board or USAID in assessing the eligibility of such requests.

Announcements in local papers will advise the Pakistani private sector of the availability of AID funds for procurement of energy sector equipment from U.S. sources. USAID/Pakistan will also request SER/COM, AID/Washington to announce the availability of this credit program to U.S. suppliers through publication of a notice in the PRE/OBR A.I.D. Procurement Information Bulletin. Depending on the response from U.S. suppliers, the Mission may also advertise this program in other publications.

A.I.D. Regulation I will apply, specifically Paragraph 201.23, Informal or Negotiated Procurement Procedures. Negotiated procurement shall be in accordance with good commercial practice with the solicitation of offers from a reasonable number of suppliers. Participating banks will be responsible for ensuring compliance with this requirement.

When Pakistan licensed distributors of U.S. manufacturers purchase commodities from their principals, as authorized under Paragraph 201.23(a)(1), the distributor does not have to solicit offers from other than his principals. Compliance with Regulation I Pricing Regulation will be monitored by SER/COM, AID/Washington.

Participating banks will be provided with copies of A.I.D. Regulation I, A.I.D. Commodity Eligibility Listing, and A.I.D. Commodity Procurement Instructions (CPI). A seminar will be arranged by USAID/Pakistan for participating bank officials to explain the responsibilities of the Banks in regard to the CPI and reporting requirements.

There will be a maximum of \$ 1,000,000 per transaction and a minimum of \$25,000 except for spare parts for existing equipment. The Energy Policy Board can approve exceptions on a case-by-case basis.

Procurement of commodities and commodity-related services will be restricted to U.S. source and origin as defined in A.I.D. Regulation I. The 50/50 shipping requirements will only apply to the aggregate of shipping under the entire ECE Program. Only U.S. and Pakistani flag shipping will be authorized for A.I.D. financing under this private sector CIP program.

d. Procedures

After consulting with and being advised by appropriate GOP agencies, the Economic Affairs Division of the Ministry of Finance and Economic Affairs will designate by name those participating banks in Pakistan which will be authorized applicants for ECE Program funds. Consideration is being given to designating the five U.S. commercial banks in Pakistan. It is proposed that each of the participating banks will be able to apply to the State Bank of Pakistan for the funds on a first-come, first-served basis. USAID/Pakistan will then issue a countersigned Project Implementation Letter (PIL) to the Economic Affairs Division, which will elaborate on all pertinent A.I.D. requirements covered in the Program Agreement Amendment and the agreed upon particulars of the private sector CIP. Attached to this PIL will be the Commodity Procurement Instruction; a copy of A.I.D. Regulation No.I; and, Schedule 6, A.I.D. Commodity Eligibility Listing.

The Economic Affairs Division will sign and submit to USAID/Pakistan Financing Requests, naming each of the participating banks as designated applicants. Based on these Financing Requests, FM/AID/Washington will establish a Letter of Commitment(s) at the corresponding banks designated by the participating banks in Pakistan.

When the participating bank in Pakistan opens a Letter of Credit to a supplier, the corresponding bank in the U.S. will confirm this Letter of Credit and pay the U.S. supplier at sight against presentation of the required documentation. The bank in the U.S. will then submit a voucher to FM/AID/Washington for reimbursement out of program funds reserved for the Letter of Commitment.

A typical import transaction will proceed as follows:

The importer will solicit offers from a reasonable number of U.S. suppliers. He will select the offer best suited for his needs. He or his bank will then file an application with the Chief Controller of Imports and Exports for an import permit under this Program. He will submit all offers he received together with his permit to the participating bank in Pakistan with a request for the bank to open a Letter of Credit in favor of the selected supplier. The margin of deposit in local currency at the time of opening the Letter of Credit will be the same as required by the State Bank of Pakistan. At present, for capital goods and equipment, no margin is required. The participating bank will open a Letter of Credit to the selected supplier and will have it confirmed by its corresponding bank in the U.S. The U.S. bank will pay the supplier and request reimbursement from A.I.D. Documents will be sent to the Pakistani bank by the U.S. bank with copies to the USAID/Pakistan Controller. The importer will receive the documents from the participating bank in Pakistan and clear the goods through customs by paying any necessary import duties. The importer will pay the local bank counterpart funds at predetermined intervals.

The participating banks will be responsible for determining the amount of local currencies equivalent to the dollar purchase price of ordered

machinery and equipment at the time of opening of Letters of Credit. Local currencies paid by the borrower will be deposited by the participating banks in the State Bank of Pakistan. Such collections and deposits will be made at predetermined intervals over a period of 18 months to three years, depending on the type of goods or equipment financed, i.e. intermediate goods or capital equipment.

B. Implementation Schedule

1. Public Sector

It is anticipated that the Equipment Selection Committee will be formed by August 1, 1984. By November 1, 1984, the eligible organizations will submit their equipment requests for review with required justifications. The selection of equipment for importation under the FY 1984 Program will be made by the Committee by January 1, 1985, and reviewed by USAID within a month thereafter. This timetable will allow for the issuance of tenders, the associated selection process, and the Shipment of Commodities to occur by the end of U.S. FY 1985. Several of the eligible organizations have already prepared preliminary lists of equipment with a value in excess of that available which ensures that these funds will be disbursed fairly rapidly.

2. Private Sector

It is anticipated that by January 1, 1985, participating banks in Pakistan will have been identified, particulars of the program agreed to and documented in a countersigned Project Implementation Letter (PIL), Commodity Procurement Instructions (CPI) issued, a seminar for participating bank officials held, advertisements placed in the local newspaper and in the A.I.D. Export Opportunities Bulletin regarding the availability of this credit program. L/COMs in corresponding banks in the U.S. should have been issued by February 1985. If demand meets expectations, it is anticipated that all of the \$ 10 million allocated for this program should be fully disbursed by December 1985.

C. Administrative and Monitoring Arrangements

1. A.I.D. Responsibilities

For USAID/Pakistan, overall project monitoring responsibility resides in its Office of Energy and Environment (E&E). The Office of Project Development and Monitoring will have primary responsibility for the procurement of all commodities, and the Executive Office, through its Commodity Control Unit (CCU), will be responsible for commodity arrival accounting, in cooperation with the Mission's Regional Affairs Office in Karachi. The Office of Financial Management will be responsible for undertaking end use checks on a periodic basis, and the Office of the Director and the Office of Program will assist E&E with policy and macro-economic considerations related to the ECE Program. The Office of Program will also provide assistance to E&E in the area of evaluation.

It is anticipated that SER/COM, AID/Washington will play a role in assisting the Mission implement the ECE Program. Representatives of SER/COM will be called upon to work with the Pakistan Embassy in Washington, D.C. to prepare tender documents and make awards, to develop and/or review specifications for certain commodities, to review tender documents, and to participate as necessary in program evaluations. USAID/Pakistan will also continue to seek SER/COM advice and assistance in the implementation of the private sector CIP.

USAID/Pakistan's responsibilities with respect to the implementation of the private sector CIP will be as follows:

- a. provide all participating banks with copies of A.I.D. Regulation I, A.I.D Commodity Eligibility List, and A.I.D. Commodity Procurement Instructions (CPI);
- b. arrange a seminar for participating bank officials to explain the responsibilities of the banks in regard to the CPI and the reporting requirements;
- c. place advertisements in newspapers to publicize the program;
- d. provide necessary information to SER/COM, AID/Washington for publication in the A.I.D. Export Opportunities Bulletin;
- e. spot-check individual transactions except where USAID/Pakistan approvals are required as indicated previously. The burden of compliance with A.I.D. and GOP regulations will be left to the participating banks;
- f. arrange for Financing Requests (FRs) to be sent to AID/Washington; and,
- g. in conjunction with the GOP's Equipment Selection Committee, provide lists of eligible equipment and overall guidance to banks to enable them to screen private sector requests.

2. GOP Responsibilities

The Lead GOP agency for the project will be the Ministry of Planning and Development. Under the Ministry of Planning and Development, the Equipment Selection Committee within the Energy Policy Board will be responsible for evaluating requests from those Ministries which have a direct involvement in energy supply and use. The Committee will make equipment selections based on the eligibility criteria and have the responsibility for coordinating and monitoring public sector disbursements. The Equipment Selection Committee and the Energy Policy Board, in conjunction with USAID, will also provide lists of eligible equipment and overall guidance to banks to enable them to screen private sector requests.

The Energy Policy Board has the responsibility for monitoring and coordination under the EP&D Project. The Energy Policy Board will have adequate resources under the EP&D Project to expand its responsibility to cover the ECE Program.

D. Evaluation Plan

There will be two levels of program evaluation: internal evaluations of program effectiveness (particularly as related to the private sector window) and formal external evaluations designed to assess overall effectiveness and assist in the design of subsequent funding tranches.

1. Internal Evaluations

The Mission plans to annually assess specific elements of the Program during the life of the PAAD. Prior to the obligation of each annual increment of funding, the Mission will cable to AID/Washington, for its review, an assessment of progress to date in implementation performance and USAID's proposals for the next year's program. Also, prior to the obligation of funds in FY 1985, the Mission will undertake an evaluation of the private sector window of the Program, with the assistance of either a SER/COM representative or an appropriate US Direct Hire from USAID/Cairo who is involved in the implementation of the private sector CIP in Egypt. This evaluation will be designed to assist the Mission to determine, in consultation with the GOP, whether to continue funding the private sector CIP program and at what levels, and to identify the need for changes, if any, in eligibility criteria, lending terms, interest rates, and/or other characteristics of the program. In order to make these decisions prior to the obligation of FY 1985 funds, this evaluation will have to take place no later than the spring of 1985. The evaluation will focus on the following factors:

- a. rapidity of disbursements;
- b. assessment of the nature of commodities imported and the likely overall impact on the energy sector;
- c. examination of those loan applications which were turned down, including an analysis of the nature of the commodities requested, the loan applicant, and the reasons for the loans being refused;
- d. analysis of program beneficiaries;
- e. adequacy of administrative and financial procedures;
- f. end-use of commodities; and,
- g. performance of banks in terms of compliance with GOP and A.I.D. requirements.

2. Formal Evaluation

A formal external evaluation is tentatively scheduled for the summer of 1986. The major objective of this evaluation will be to identify lessons learned and areas for continued funding, including specific procurement arrangements and financial mechanisms. The

evaluation will serve as the basis for the preparation of a possible ECE PAAD Amendment, covering the period FY 1987 - FY 1989. By July/August, 1986, there will be almost two years of experience in implementing the program, much of the equipment will be in the field, the GOP will be embarking on the fourth year of its Sixth Five-Year Energy Plan, and implementation of other major A.I.D.-financed energy sector projects will be well along. The proposed evaluation will include a critical review of the following:

- a. progress made toward achievement of the purposes of the activity (actual compared with planned performance);
- b. end use of imported commodities;
- c. role of the Program as an instrument of policy dialogue with the GOP;
- d. use of generated rupees;
- e. USAID/Pakistan's monitoring of arrival accounting and end use of the imported commodities;
- f. rapidity of disbursements;
- g. A.I.D. and GOP collaboration and the role(s) of various organizations;
- h. potential areas for improving Program implementation schedules, funding arrangements, and procurement procedures;
- i. role of the program in the technology transfer process;
- j. extent to which the program supports energy goals and other GOP-USAID energy sector projects; and,
- k. unanticipated problems.

This proposed evaluation should be completed in six weeks by a three-person team consisting of an energy planning specialist, energy equipment specialist, and an evaluation expert, working closely with both Mission and GOP officials. The total estimated cost of the evaluation is \$50,000 and will be financed under the Project Design Fund (391-0470).

VII. FINANCIAL CONSIDERATIONS

A. Program Allocations

The FY84 tranche amounts to \$20 million. In each of the next two years, a \$40 million tranche is planned. The loan/grant split over the life of the project is provisionally planned to be 80/20. The FY84 tranche will be equally divided between the public and private sectors. Later tranche allocations will be guided by the first year's experience.

B. Obligation and Disbursement Schedules

As indicated, the Mission proposes to obligate \$20 million, \$40 million, and \$40 million for the ECE Program in FY 1984, FY 1985 and FY 1986, respectively. The equipment for the first year in the public sector will be selected from lists already provided by WAPDA, OGDC, and KESC, which should facilitate the rapid disbursement of these funds.

If demand meets expectations, disbursement of the entire \$10 million programmed for the private sector CIP should be completed by the end of 1985.

The disbursement schedule in FY 1985 and FY 1986 will depend on the commodity mix and the implementation approach. Funds for equipment purchases by public sector agencies are likely to be disbursed within six to nine months. Total disbursement of funds through the private sector "window" will probably require 12 to 18 months.

C. Local Cost Financing

A minimal amount of program funding will be used to finance the local costs of commodity-related services such as writing specifications or other programmatic needs such as advertising in newspapers or training seminars.

D. Generation of Counterpart Funds

Section 609 of the Foreign Assistance Act (FAA) requires that the recipient country establish a Special Account for the deposit of rupee proceeds to the recipient country from the sale of commodities furnished with ESF on a grant basis. No grant money will be utilized during the FY 1984 ECE program so that this legislative requirement will not apply the first year. In FY 1985, grant funds will be used to finance only public sector purchases. No sale or accrual of proceeds, as contemplated under FAA section 609, will occur under the public sector portion of the program since the GOP does not "sell" this equipment to the autonomous agencies and ministries involved.

E. Methods of Implementation and Financing

The use of direct L/COMs to suppliers (and direct reimbursement for local cost financing) is contemplated for most financial transactions under this Program, which is consistent with the preferred methods of

financing as contained in AID's Payment Verification Policy Implementation Guidance dated December 30, 1983. Bank L/COMs and L/Cs will be utilized for the private sector CIP and commodities imported by the public sector companies because of the anticipated large volume of individual transactions. This is consistent with Policy Statement No.4 on page 3 of the Guidance which reads:

"As part of the assessments under 1. above, a justification is to be provided whenever the Mission proposes use of the bank letter of commitment rather than the direct letter of commitment except for CIP and project commodity financing for which the Mission anticipates a proliferation of invoices."

In accordance with Policy Statement No.15 of the Guidance, a commodity arrival accounting system has been developed at USAID/Pakistan and was published in the form of a Mission Manual Order in October 1983. A Commodity Control Unit (CCU) has been established in the Mission's Office of Management (O/EXO) to implement this system. Based on experience over the last nine months, the Mission is satisfied that the procedures being employed are adequate to ensure that A.I.D.-financed commodities are properly accounted for. In addition, the Mission's Office of Financial Management (O/FM), with the assistance of the Mission's Regional Affairs Officers and Liaison Officers in all four provinces, has instituted a program of end-use checks, which will be undertaken on a periodic basis throughout the life of the Program.

VIII. CONDITIONS, COVENANTS, AND NEGOTIATING STATUS

A. Conditions Precedent

1. Conditions Precedent to First Disbursement

Prior to the first disbursement under this Loan and Grant Agreement, or to the issuance by A.I.D. of documentation pursuant to which such disbursement will be made, the Borrower/Grantee shall, except as the parties may otherwise agree in writing, furnish or have furnished to A.I.D., in form and substance satisfactory to A.I.D., within thirty (30) days after the signing of the Program Agreement:

a. a written opinion of Counsel acceptable to A.I.D. that the Agreement has been duly authorized and/or ratified by, and executed on behalf of the Borrower/Grantee and that it constitutes a valid and legally binding obligation of the Borrower/Grantee in accordance with all of its terms; and,

b. a statement of the names and titles of the additional representatives acting for the Borrower/Grantee who are authorized to sign procurement documents together with a specimen signature of each such person certified as to its authenticity.

2. Condition Precedent to Disbursement for Commodities for Public Sector Agencies

Prior to any disbursement of funds under this Agreement for commodities for public sector agencies or to the issuance by A.I.D. of documentation pursuant to which such disbursement will be made, the Borrower/Grantee shall, except as the Parties may otherwise agree in writing, furnish or have furnished to A.I.D., in form and substance satisfactory to A.I.D., within ninety (90) days after the date of signing of the Program Agreement, evidence that an Equipment Selection Committee, operating under the auspices of the Energy Policy Board in the Borrower/Grantee's Ministry of Planning and Development, has been established.

3. Conditions Precedent to Disbursement for the Private Sector Commodity Import Program (CIP) and Commodities for Public Sector Companies

Prior to any disbursement of funds under this Agreement for the private sector CIP component and for commodities to be imported by public sector companies or to the issuance by A.I.D. of documentation pursuant to which such disbursement will be made, the Borrower/Grantee shall, except as the parties may otherwise agree in writing, furnish or have furnished to A.I.D., in form and substance satisfactory to A.I.D., within ninety (90) days after the date of signing of the Program Agreement, the names of participating banks in Pakistan. Prior to disbursement, the Borrower/Grantee and A.I.D. shall also agree in writing to the interest rates and lending terms, credit ceilings (if applicable), eligible commodities and importers, payback periods, and procedures to be followed by the Borrower/Grantee in making allocations to participating banks.

B. Covenant as to Reporting

The Borrower/Grantee agrees to provide A.I.D. with written reports covering the implementation of this Program, the requirements of which shall be provided in a Project Implementation Letter (PIL).

C. Negotiating Status

The Mission has held numerous discussions with GOP officials on the particulars of the private sector CIP component but final agreement has not yet been reached on all of the characteristics of the proposed program. For example, the GOP has not yet provided the Mission with its decision on participating banks, eligible importers, the proposed payback periods for borrowers, the likelihood of increasing the credit ceilings of participating banks, and the procedures for making allocations to the banks. All other particulars of the program have been approved in principle by the GOP. Agreement is anticipated on these outstanding issues by the time of Program Agreement negotiations. This agreement will be documented in a countersigned PIL, prior to the disbursement of funds for the program.

PROGRAM ASSISTANCE APPROVAL DOCUMENT (PAAD)

PAKISTAN

ENERGY COMMODITIES AND EQUIPMENT

391-0486

IX. ANNEXES

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ADM AID

E.O. 12356: N/A

TAGS:

SUBJECT: ENERGY PRICING AND SECTOR DEREGULATION: USAID
 STRATEGY

REF: (A) STATE 147849 (B) ISLAMABAD 12453

1. AID/W COMMENDS THE MISSION ON ITS PRESENTATION IN REF B AND ITS EXTENSIVE DIALOGUE UNDERWAY WITH THE WORLD BANK ON PRICING AND INVESTMENT ISSUES.

2. BELOW WE OFFER SEVERAL POINTS THAT MAY BE USEFUL TO YOUR CONSIDERATION OF HOW THE ECE PROJECT CAN BE USED TO SUPPORT THE MISSION'S STRATEGY.

3. RURAL ELECTRIFICATION: THE MISSION HAS A MAJOR INVESTMENT IN THIS SECTOR WHICH IS CRITICAL TO ELECTRICITY PRICING ISSUES, SINCE 25-30 PERCENT INCLUDING LOSSES; OF PAKISTAN'S ELECTRICITY IS CONSUMED BY TUBEWELLS AND RURAL CONSUMERS. AS AN INPUT TO WAPDA'S DEVELOPMENT OF AN RE MASTER PLAN, AID FINANCED A COMPREHENSIVE STUDY BY ARTHUR D. LITTLE ON GENERAL

POLICIES AND IMPLEMENTATION GUIDELINES. THE STUDY CONCLUDED THAT "THE ECONOMICS OF ELECTRIFIED TUBEWELL IRRIGATION WOULD REMAIN HIGHLY FAVORABLE IN MOST CASES EVEN IF ELECTRICITY COSTS ARE RAISED SIGNIFICANTLY FROM PRESENT HIGHLY SUBSIDIZED LEVELS." THE CABLE FAILS TO INDICATE WHAT THE MISSION IS DOING WITH THIS STUDY AND WHETHER THIS WILL BE AN AREA IN WHICH THE BANK WITH AID SUPPORT WOULD SEEK SPECIFIC INCREMENTAL TARIFF TARGETS FOR 1985 AND 1986. SUCH A POLICY TOGETHER WITH PROVISION UNDER ECE FOR IMPORTATION OF MORE EFFICIENT PUMPS WOULD APPEAR TO BE A LOGICAL AREA FOR AID CONCENTRATION. THE SIXTH FIVE YEAR PLAN SPECIFICALLY SUGGESTS THAT THE "SOLUTION OF THE PROBLEM LIES IN MAINTAINING THE RURAL POWER TARIFFS ABOVE THE COST OF ELECTRICITY SUPPLY SO THAT THERE IS SUFFICIENT INCENTIVE FOR SUPPLY ORGANIZATION."

4. COST OF POWER GENERATION -- TARIFF IMPLICATIONS

THE MISSION NEEDS TO BE CONCERNED WITH BOTH THE SHORT

AND THE LONG-RUN COSTS OF POWER GENERATION. CRITICAL TO THE SHORT-RUN ISSUE IS THE PRICE OF NATURAL GAS TO WAPDA, CURRENTLY HIGHLY SUBSIDIZED. THE AID/ADP COMBINED CYCLE PROJECT PROVIDES AN ENTRY INTO THIS ARENA. LONG RUN MARGINAL COST IS A PROPER APPROACH IN LOOKING AT CAPACITY EXPANSION AND IT IS CLEAR THAT THE NEW OIL, COAL, NUCLEAR CAPACITY PLANNED WILL INCREASE THE COST OF GENERATION IN THE SYSTEM IN THE FUTURE. AID WORK ON LAHRA WILL BE A CRITICAL INPUT INTO THIS CALCULATION AND POLICY DIALOGUE. AN EQUALLY DIFFICULT TASK IS TRANSFORMING LPMC INTO AN ACCEPTABLE TARIFF STRUCTURE. UTILITIES COMMONLY USE THREE APPROACHES TO ALLOCATING COSTS CUSTOMER, DEMAND, AND ENERGY, AMONG CLASSES OF CONSUMERS: (1) PEAK RESPONSIBILITY METHOD -- EACH CLASS HAS ALLOCATED TO IT THAT PORTION OF THE PLANT THAT IS IN PROPORTION TO THE CLASS DEMAND AT THE TIME OF SYSTEM PEAK;

(2) MAXIMUM NONCOINCIDENT METHOD -- PLANT COSTS ARE ALLOCATED ON THE BASIS OF THE RATIO OF A CLASS' MAXIMUM DEMAND REGARDLESS OF TIME OF OCCURENCE TO THE SUM OF ALL THE CLASSES' MAXIMUM DEMANDS;

(3) AVERAGE-LOAD METHOD -- ALLOCATION IS MADE BASED ON THE PROPORTION EACH CLASS' AVERAGE LOAD REPRESENTS IN

OVERALL SYSTEM AVERAGE LOAD. IN GENERAL, FOR EACH CLASS OF SERVICE, THE UNIT COST OF FURNISHING SERVICE DECREASES WITH INCREASED VOLUME AND WITH INCREASED LOAD FACTOR. THE MISSION'S ENERGY PLANNING AND DEVELOPMENT PROJECT OFFERS A VEHICLE FOR EXAMINING IN COORDINATION WITH THE WORLD BANK THESE ISSUES IN DEPTH. IN THE SELECTION OF THE PSC LONG-TERM GENERAL ENERGY ADVISOR, THE MISSION MIGHT SEE IF SOMEONE WITH PRICING EXPERIENCE MIGHT BE AVAILABLE.

5. A CONSUMER GAS PRICE ESCALATION SCHEDULE AND CONSERVATION POLICY

AID/W BELIEVES THAT THE GOP AND WORLD BANK NEED TO CONSIDER A MORE RAPID SCHEDULE OF GAS PRICE INCREASES THAN CURRENTLY IN PLACE. THE SERIOUS CURRENT SHORTAGES, THE MOVEMENT OF INDUSTRY BACK TO OIL, THE LAGGING PETROLEUM EXPLORATION, THE HIGHER MARGINAL COST OF NEW GAS E.G. SHANDROT, PLUS THE CURRENT LOW PRICES, CALL FOR A REEXAMINATION OF WHETHER FULL PARITY IS POSSIBLE MUCH SOONER. DELAYING SUCH A MOVE TO 1993 DOES NOT APPEAR WELL ADVISED FROM AN ECONOMIC STANDPOINT. MISSION WILL RECALL IEDC RECOMMENDATION FOR FUEL IMPORT PARITY RATEER THAN TWO-THIRDS SINCE "IT AVOIDS ENCOURAGING THE USE OF GAS IN PREFERENCE TO FUEL OIL AND BECAUSE IT PREPARES THE WAY FOR A NEXT PHASE OF PRICE

INCREASES FOR GAS WHICH WOULD MOVE PRICES UP TO LEVELS COMPETITIVE WITH MIDDLE DISTILLATES SINCE GAS HAS BEEN PHASED OUT OF FUEL OIL USES. FURTHERMORE IT WILL PROVIDE AN ADDED STIMULUS TO INDIGENOUS COAL DEVELOPMENT. ONE APPROACH MIGHT BE TO SEEK AN AGREEMENT WITH GOP TO DEVELOP A NATIONAL ENERGY CONSERVATION STRATEGY UNDER WHICH A DETAILED EXAMINATION OF THE IMPACT OF AN ACCELERATED PRICE INCREASE SCENARIO ON INDUSTRIAL PRODUCTION WOULD BE CARRIED OUT AS WELL AS DETAILED STUDIES OF THE POTENTIAL FOR ENERGY CONSERVATION. THE NATIONAL ENERGY CONSERVATION STRATEGY SUPPORTED BY ENERGY PLANNING AND DEVELOPMENT AND ECE RESOURCES, AS WELL AS OTHER DONOR FINANCING, WOULD IN FINAL FORM INCLUDE A RATIONAL PRICE INCREASE SCHEDULE THAT TAKES INTO ACCOUNT THE POTENTIAL FOR CONSERVATION MEASURES.

6. PRODUCER PRICE FOR GAS

THE DISCUSSION OF THE PRODUCER PRICE FOR GAS POINTS TO A FORMULA BASED ON A KNOWN PERCENTAGE OF THE BORDER PRICE

FOR EQUIVALENT FUEL OIL, WITH DISCOUNTS FOR LOCATION, GEOLOGY AND FIELD SIZE. THE STRATEGY OUGHT TO BE MORE EXPLICIT ABOUT THE MAGNITUDE OF THE PERCENTAGE THAT THE MISSION ENVISIONS. SECOND, THE RATIONALE AND WORKINGS OF AN ILLUSTRATIVE FORMULA FOR DISCOUNTS OUGHT TO BE DISCUSSED IN MORE DETAIL. THIRD, IN THE EVENT THAT SUCH A FORMULA LEADS TO UNDULY LOW INCENTIVES FOR SPECIFIC FIELDS, IS THERE A PROVISION IN THE MISSION'S STRATEGY FOR ADEQUATE FLEXIBILITY FOR PRIVATE SECTOR PRODUCERS TO NEGOTIATE HIGHER PRICES?

7. COAL PRICING

THE STRATEGY NOTES THAT THE PRICING MECHANISM ROUGHLY APPROXIMATES THAT OF CARTEL PRICING AND ARGUES THAT A MORE STABLE AND MORE SUBSTANTIAL FRAMEWORK FOR COMMERCIAL COAL DEMAND WOULD LEAD TO MORE RATIONAL COAL PRICING. THE STRATEGY OUGHT TO BE MORE EXPLICIT ABOUT THE CONDITIONS UNDER WHICH THIS FRAMEWORK WOULD LEAD TO MORE COMPETITIVE MARKETING OF COAL, RATHER THAN MERELY STRENGTHENING THE CARTEL. SECOND, TO WHAT EXTENT DOES THIS STRATEGY DEPEND REALISTIC GAS PRICING?

8. WE LOOK FORWARD TO THE MISSION'S DISCUSSION OF THESE ISSUES IN THE ECE SUBMISSION. SHULTZ

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AIDAC

E.O. 12356: N/A
TAGS:
SUBJECT: ENERGY POLICY DIALOGUE

REF: ISLAMAPAD 12455

1. FOLLOWING MEMO RECEIVED FROM COUNSELOR KIMBALL:

QUOTE:

WE HAVE REVIEWED THE SUBJECT CABLE ISLAMAPAD 12455, WITH GREAT INTEREST. THE MISSION HAS OBVIOUSLY DONE A LOT OF THINKING ON ITS ENERGY STRATEGY AND SHOULD BE COMMENDED.

I SUGGEST THAT YOU NOW REQUEST THE MISSION TO INCLUDE IN THE PAAD A DISCUSSION OF WHETHER, OR HOW THE FCE WILL BE USED TO SUPPORT THE MISSION'S OVERALL STRATEGY. CAN IT BE USED TO LEVERAGE SPECIFIC ASPECTS OF POLICY MOVEMENT THIS FY? WILL IT PROVIDE A FORUM FOR DISCUSSING ENERGY ISSUES WITH THE GOP? WHICH ISSUES WOULD BE INCLUDED ON THE AGENDA FOR SUCH DISCUSSIONS? END QUOTE.

2. SEP TEL FOLLOWS WITH BUREAU COMMENTS ON REF TEL. SPULT
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ANNEX A
Page 5 of 3

AIDAC

FOR ASIA/PNS MUTCHLER

E.O. 12356 N/A
SUBJECT; PRICING OF CAPITAL

REFERENCE: MUTCHLER/BLACKTON TELECON, SAME SUBJECT

1. INTEREST HAS BEEN EXPRESSED IN THE REASONING BEHIND THE MISSION'S FINDING THAT 14% INTEREST ON ACE FUNDS (INCLUDING THE COST OF FX RISK) IS A NON-DISTORTING PRICE FOR CAPITAL.
2. IN THE HAPPIEST OF SITUATIONS WE WOULD BE ABLE TO REPORT THAT THE MARKET HAS FOUND THIS PRICE TO EFFECTIVELY BALANCE THE SUPPLY AND DEMAND OF CAPITAL IN PAKISTAN. UNHAPPILY, THE CREDIT MARKET IS AN ADMINISTERED ONE AND WE CANNOT RELY UPON THIS SIMPLE AND OTHERWISE INFALLIBLE TEST.
3. UNDER CONDITIONS OF MARKET IMPERFECTION, SUCH AS ADMINISTERED PRICES, WHAT ARE THE PROxies FOR MARKET EQUILIBRIUM? WHAT ARE THE TELLTALE SIGNS OF MISPRICING? RATIONING AND QUEUING ARE THE HALLMARKS OF AN ARTIFICIALLY LOW PRICE UNDER AN ADMINISTERED PRICE REGIME. IDLE INVENTORY AND EXCESS CAPACITY ARE THE CORRESPONDING SIGNALS OF OVERPRICING IN ADMINISTERED PRICE REGIMES.
4. WITH THESE SIMPLE RULES OF THUMB IN MIND, WE SET OUT TO FIND EVIDENCE OF RATIONING AND QUEUEING OR, ALTERNATIVELY, SURPLUS INVENTORY AND UNUSED CAPACITY IN THE CREDIT MARKETS. WHEN INTEREST RATES ARE TOO LOW, WHICH WAS OUR REAL FEAR, THEN ONE CAN EXPECT THE FOLLOWING:
 - 1) A LARGE BACKLOG OF UNSERVICED LOAN APPLICATIONS
 - 2) WIDESPREAD REPORTS OF "SIDE PAYMENTS" FROM BORROWERS TO LENDERS TO GAIN ACCESS TO LOAN FUNDS
 - 3) AN ACTIVE "CURE MARKET" OPERATING IN PARALLEL TO THE FORMAL MARKETS WHICH PICKS UP UNMET CREDIT DEMAND AT SUBSTANTIALLY HIGHER PRICES
 - 4) IN THE CASE OF FX LENDING, AN ACTIVE "PARALLEL MARKET" IN FX INSTRUMENTS WHICH ENTAILS SIGNIFICANTLY

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HIGHER LC/FI RATIOS THAN THOSE IN THE OFFICIAL CREDIT MARKETS

ANNEX A
Page 6. of

5) AN ACTIVE SECONDARY MARKET IN LOAN FUNDS FROM OFFICE SOURCES WHICH ARE SOLD IN THE CURB MARKETS BY SELLERS WITH GOOD CREDIT ACCESS TO BUYERS WITH BETTER PROJECTS BUT LESS CREDIT ACCESS

5. WE COULD FIND LITTLE SIGNIFICANT EVIDENCE OF THESE FEATURES IN THE CREDIT MARKETS IN PAKISTAN. NEITHER THE BANKS NOR THE CHAMBERS OF COMMERCE REPORT MAJOR PROBLEMS IN ACCESSING THE OFFICIAL CREDIT MARKETS AND THERE IS NO EVIDENCE OF A BACKLOG OF UNSERVICED SOUND LOAN APPLICATIONS IN THE MAJOR BANKS. WHILE THERE ARE SOME UNVERIFIED REPORTS OF "SIDE PAYMENTS" ASSOCIATED WITH ACCESS TO LONG TERM (8-14 YEAR LOANS) FROM THE PUBLIC SECTOR INDUSTRIAL FINANCE COMPANIES, WE UNCOVERED NO SIGNS THAT SUCH PAYMENTS WERE NECESSARY TO ACCESS TRADE FINANCING AND WORKING CAPITAL LOANS OF THE TYPES REPRESENTED BY THE ACE AND ECL PROGRAM. THERE IS MOST CERTAINLY A "CURB" CREDIT MARKET IN PAKISTAN. IT EXISTS TO SERVICE THREE CATEGORIES OF TRANSACTIONS:

A. LOANS TO BORROWERS WHO CANNOT MEET THE COLLATERAL REQUIREMENTS OF THE FORMAL BANKING SYSTEM. "CURB" LENDERS RELY UPON A MIXTURE OF BUSINESS SAVVY AND STRONG ENFORCEMENT AND COLLECTION MEASURES TO MAKE UNSECURED OR PARTIALLY SECURED LOANS AT RATES HIGHER THAN THOSE IN THE BANKING SYSTEM.

B. LOANS FOR UNSANCTIONED PROJECTS. LARGE INVESTMENTS REQUIRE A VARIETY OF GOVERNMENT APPROVALS AND SOME PROFITABLE INVESTMENTS IN SUCH AREAS AS HOTELS, CINEMAS AND CERTAIN INDUSTRIAL UNDERTAKINGS ARE MORE OR LESS CLOSED TO NEW ENTRANTS. THE FORMAL CREDIT SYSTEM CANNOT LEND FOR SUCH PROJECTS IN THE ABSENCE OF SANCTIONS AND PERMITS, BUT THE "CURB" MARKET CAN AND DOES.

C. TRANSFERS OF "BLACK" MONEY WITHIN THE INFORMAL ECONOMY. SUBSTANTIAL QUANTITIES OF CAPITAL EXIST OUTSIDE THE OFFICIALLY RECOGNIZED ECONOMY. FOR EXAMPLE, PROFITS FROM UNSANCTIONED ENTERPRISES, SUCH

AS THOSE DISCUSSED ABOVE, CANNOT EASILY FIT THE BANKING SYSTEM. THE "CURB" MARKET PROVIDES MECHANISMS FOR KEEPING BLACK MONEY AT WORK IN THE INFORMAL ECONOMY.

SINCE AID FINANCING UNDER THE PRIVATE SECTOR WINDOWS OF ACE AND FCE WILL BE FOR THE IMPORT OF COMMODITIES AND EQUIPMENT OFFICIALLY SANCTIONED BY THE GOVERNMENT, THE CURB MARKET IS NOT REALLY A VALID TEST OF CAPITAL PRICING FOR THE CATEGORIES OF LENDING WE PROPOSE TO UNDERTAKE. AGRIBUSINESS EQUIPMENT, ENERGY CONSERVATION EQUIPMENT AND THE LIKE ARE NORMALLY FINANCED THROUGH OFFICIAL CREDIT CHANNELS.

6. THE FINAL TWO TESTS FOR SIGNIFICANT DISTORTIONS IN CREDIT MARKETS ARE WIDE GAPS BETWEEN OFFICIAL AND PARALLEL FX MARKETS AND THE RESALE OF OFFICIALLY PROVIDED CREDIT IN THE SECONDARY MARKET. IN THE FIRST CASE, THE SPREAD BETWEEN OFFICIAL AND PARALLEL RATES IN THE DOLLAR/RUPEE MARKET ARE USUALLY BETWEEN TWO PERCENT AND FIVE PERCENT. THESE LEVELS DO NOT SUGGEST SIGNIFICANT DISTORTIONS. IN THE SECOND CASE, WHILE DISINTERMEDIATION AND ARBITRAGE BETWEEN OFFICIAL AND "CURB" CREDIT MARKETS ARE INTRINSICALLY HARD TO MEASURE, THE CONSENSUS OF KNOWLEDGEABLE OPINION IS THAT THE VALUE OF "WHITE" MONEY FROM THE OFFICIAL SOURCES IS SUFFICIENTLY GREATER THAN "BLACK" FUNDS IN THE CURB MARKETS THAT IT WOULD BE A LOSING PROPOSITION TO SELL CLEAN LOAN FUNDS INTO THE SECONDARY MARKET.

7. SUMMARY. IN THE ABSENCE OF A FREE MARKET (OR A ROUGH APPROXIMATION THEREOF) IT IS DIFFICULT TO PROVE THE "RIGHTNESS" OF FACTOR PRICES. IT IS ONLY THROUGH ANALYSIS AND OBSERVATION OF THE EVIDENCE OF MARKET DISTORTIONS, OR THE PREVALENCE OF ARBITRAGE, THAT ONE CAN INFER THE DEGREE OF DEVIATION BETWEEN AN ADMINISTERED FACTOR PRICE AND AN EQUILIBRIUM PRICE. IT IS THE JUDGEMENT OF USAID/PAKISTAN, BASED UPON OBSERVATION OF THE FORMAL AND INFORMAL CREDIT MARKETS, THAT THE CURRENT GOP INTEREST RATES FOR THE TYPES OF TRADE AND WORKING CAPITAL FINANCING TO BE UNDERTAKEN IN THE ACE AND FCE PROJECTS ARE REASONABLY CLOSE TO THE "RIGHT" PRICE FOR CAPITAL OF THIS TYPE. AN EFFECTIVE RATE OF 14 PERCENT COMPARES WITH THE FOLLOWING INTERNATIONAL RATES IN THE PAST MONTH:

-- US COMMERCIAL PAPER PLACED DIRECTLY FOR 180 DAYS: CIRCA 12 PERCENT

-- LONDON INTERBANK OFFERED RATE FOR 6 MONTHS: CIRCA 12.5 PERCENT

-- US PRIME RATE: CIRCA 12.5 PERCENT

-- MOODY'S AVERAGE FOR LONG TERM CORPORATE NOTES: CIRCA 14 PERCENT

AGAINST THIS ARRAY OF RATES, FOURTEEN PERCENT FOR
DOLLARS (180 DAYS TO THREE YEARS) DOES NOT SEEM
EXTRAORDINARY. WE HOPE THAT THIS NECESSARILY
DIFFERENTIAL AND IMPRECISE APPROACH TO RESPONDING TO
WASHINGTON'S CONCERNS ABOUT CAPITAL PRICING IS
HELPFUL. WE LOOK FORWARD TO THE DAY WHEN
DEREGULATION OF THE FINANCIAL SYSTEM IN PAKISTAN WILL
HAVE PROCEEDED TO THE POINT WHERE WE CAN RELY UPON
THE INVISIBLE HAND TO SPARE US ALL THE ANNOYANCE OF
TRYING TO MAKE THESE JUDGEMENTS. HINTON
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ISLAMABAD 12455

AIDAC

E.O. 12356 N/A

SUBJECT: ENERGY PRICING AND SECTOR DEREGULATION:
USAID STRATEGY

REF: STATE 147849

1. THIS CABLE REVIEWS USAID STRATEGY ON ENERGY PRICING ISSUES. WITH MORE THAN THIRTY PERCENT OF OUR PLANNET PORTFOLIO IN ENERGY PROJECTS AND WITH A NEW INITIATIVE IN ENERGY COMMODITY FINANCING SCHEDULED FOR FY 84 AUTHORIZATION, WE BELIEVE THAT A RECAP ON THESE IMPORTANT ISSUES COULD BE USEFUL TO THOSE IN ASIA BUREAU AND ELSEWHERE IN WASHINGTON WITH AN INTEREST IN PAKISTAN'S ENERGY SECTOR. THIS CABLE DIRECTLY RESPONDS TO THE INSTRUCTION IN THE REFERENCED CDSS REPORTING CABLE FOR THE MISSION TO ADVISE AID/W OF ITS ENERGY PRICING STRATEGY.

2. ENERGY PRICING STRATEGY. OUR CORE CONCERN IS, OF COURSE, TO ASSIST PAKISTAN TO MOVE TOWARDS AN ENERGY PRICING REGIME WHICH IS OPTIMAL IN TERMS OF (A) INDUCING EFFICIENT USE OF SCARCE ENERGY RESOURCES, (B) DIRECTING EFFICIENT ALLOCATION OF NEW INVESTMENT AND RESOURCES INTO ENERGY SECTOR DEVELOPMENT, AND (C) EXPANDING THE PRIVATE SECTOR'S ROLE IN THE SECTOR. IT IS DIFFICULT TO IMAGINE A SETTING IN WHICH THESE WOULD NOT BE THE CORNERSTONES OF AN AID ENERGY PRICING STRATEGY. PROGRESS TOWARDS THIS BASIC GOAL OF AN EFFICIENT ENERGY PRICE REGIME WILL BE A COMPLEX AND MULTI YEAR PROCESS. IT WILL INVOLVE A CONSIDERABLE RANGE OF DETAILED TECHNICAL ANALYSES OF THE FINANCIAL AND ECONOMIC SETTING OF EACH OF PAKISTAN'S MAJOR ENERGY SOURCES: OIL, NATURAL GAS, COAL, HYDRO POWER, ETC. THE WORLD BANK HAS TAKEN THE LEAD IN SUPPORTING THIS ANALYTIC WORK IN THE CONTEXT OF THEIR MASSIVE ENERGY SECTOR PORTFOLIO IN PAKISTAN WHICH WILL RUN TO SOME DOLS 500 MILLION OVER THE NEXT FOUR TO FIVE YEARS. THE BANK HAS THE SUBSECTORAL EXPERTISE IN OIL, GAS, COAL AND HYDRO ANALYSIS AS WELL AS THE TARIFF EXPERTISE TO PULL THIS ANALYSIS TOGETHER INTO A COHESIVE LONG RUN SECTOR PRICING STRATEGY FOR PAKISTAN. USAID PARTICIPATES IN A CONTINUOUS AND EXTENSIVE DIALOGUE WITH THE BANK ON ENERGY PRICING AND ALL OTHER MAJOR ENERGY SECTOR ISSUES. THERE IS CONSIDERABLE COMPLEMENTARITY IN OUR PORTFOLIOS WHICH UNDERPINS THIS DIALOGUE. USAID'S

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ABILITY TO FINANCE INSTITUTIONAL DEVELOPMENTS IN ENERGY GIVE US THE LEAD IN MANY ORGANIZATIONAL AND MANAGEMENT QUESTIONS IN THE SECTOR, WHILE THE BANK'S SUPERIOR PRICE AND TARIFF EXPERTISE POSITION IT FOR THE LEAD ROLE ON THESE ISSUES. OUR DIALOGUE BUILDS UPON THIS COMPLEMENTARITY AND WE HAVE BEEN ABLE TO DEVELOP A UNITED FRONT ON A BROAD RANGE OF INSTITUTIONAL AND PRICE ISSUES.

3. ON PRICING, WE SHARE A COMMON SET OF OBJECTIVES WITH THE WORLD BANK WHICH ARE WORTH REVIEWING HERE:

-- A. ELECTRICITY PRICING. OUR COMMON GOAL IS TO MOVE GOP ELECTRICITY TARIFFS TO PARITY WITH LONG RANGE MARGINAL COSTS. WE BELIEVE THAT LPMC IS THE ONLY ACCEPTABLE BASIS FOR A TARIFF REGIME WHICH CAN INSURE EFFICIENT USE OF ELECTRICITY AND CAN MOBILIZE ADEQUATE RESOURCES FOR THE LONG RUN DEVELOPMENT OF THE POWER SECTOR. WE AND THE BANK SHARE THE VIEW THAT THE LEVEL AND STRUCTURE OF ELECTRICITY TARIFFS IN 1984 ARE NOT CONSISTENT WITH LPMC. CAPACITY CHARGES, IN PARTICULAR, ARE INADEQUATE. THIS GIVES RISE TO EXCESSIVE PEAK DEMANDS AND THE UNFORTUNATE COROLLARY OF LOAD SHEDDING. IT ALSO DISTORTS THE LONG RUN POWER INVESTMENT SCHEDULE AWAY FROM BASE LOAD DEVELOPMENT TOWARDS EXCESSIVE PEAK LOAD GENERATION CAPACITY. WE AND THE BANK SHARE THE STRATEGIC OBJECTIVE OF MOVING THE GOP TO LPMC PARITY BY 1992. THE BANK INTENDS TO NEGOTIATE SPECIFIC INCREMENTAL TARIFF TARGETS FOR 1985 AND 1986. USAID AND THE BANK WILL ALSO FINANCE A RESEARCH AND MANAGEMENT STUDY WHICH WILL PROVIDE THE FINANCIAL AND ECONOMIC DATA BASE FOR MEANINGFUL CALCULATION OF LPMC. THIS IS A CASE WHERE USAID HAS TAKEN THE LEAD, IN CLOSE CONSULTATION WITH THE BANK, IN FRAMING AND NEGOTIATING THE BROAD TERMS OF REFERENCE FOR ANALYTICAL WORK AIMED AT IMPROVING CONTROLS ON COST OF SERVICE, REFINING SERVICE RATES, MANAGING RECURRENT COSTS, IMPROVING THE BASIS FOR CAPITAL PLANT VALUATION AND DEPRECIATION, AND OVERALL REFINEMENTS IN THE SYSTEM OF FINANCIAL MANAGEMENT IN THE ELECTRICITY SUBSECTOR. THE BANK'S FINANCING OF

WAPDA IV AND PLANNED SECTOR LENDING IN ENERGY IS KEYS TO GOP PERFORMANCE ON THESE JOINTLY FINANCED INITIATIVES. THIS TYPE OF CROSS CONSULTATION AND COMPLEMENTARY POLICY INITIATIVE CHARACTERIZE THE VERY CONSTRUCTIVE USAID/BANK RELATIONS IN THIS SECTOR. THIS STUDY IS A SINE QUA NON FOR MEANINGFUL TARIFF REFORM AND AID WILL DO WHAT IT CAN TO ASSIST THE BANK IN ASSURING THAT THE STUDY IS COMPLETED ON A TIMELY BASIS. WITHOUT THIS STUDY WAPDA AND KESC WILL CONTINUE TO USE INTERNAL FINANCIAL RATIOS BASED UPON SPURIOUS CAPITAL VALUATIONS TO JUSTIFY UNDERSTATED GENERATION COSTS. SUMMARY. USAID FULLY CONCURS WITH THE LRMC PRINCIPLE AND THE 1990 TARGET FOR 100 PERCENT COMPLIANCE. WE WILL SUPPORT THE BANK IN ALL EFFORTS TO ACHIEVE THAT TARGET. WE WILL NOT INTRODUCE ALTERNATIVE PRICING PRINCIPLES OR COVENANTS WHICH WOULD MUDDY THE WATERS ON THIS ISSUE. THE BANK'S PRINCIPLE IS CLEAR, CORRECT AND FEASIBLE WITHIN THE PLANNED TIMEFRAME. THE WORLD BANK ENERGY TEAM NOW IN PAKISTAN HAS ASKED US TO PLAY THE ROLE DESCRIBED ABOVE FOR USAID. WE BELIEVE THEIR REQUEST IS SOUND.

--B. NATURAL GAS PRICING. GAS PRICING IS INTRINSICALLY MORE COMPLEX THAN ELECTRICITY PRICING BECAUSE (A) THERE ARE UNIQUE LOGISTICAL CONSTRAINTS TO OPTIMUM DISTRIBUTION AND (B) THERE ARE SIGNIFICANT QUALITATIVE DIFFERENCES BETWEEN VARIOUS GAS PRODUCTS WHICH INFLUENCE END USE OPTIONS. LRMC HAS NOT BEEN FOUND TO BE A SOUND GUIDE TO GAS PRICING IN OTHER COUNTRIES AND AID DOES NOT BELIEVE THAT IT WILL PROVE TO BE SO HERE IN PAKISTAN. RATHER, WE SHARE WITH THE WORLD BANK THE VIEW THAT THE GAS PRICING REGIME NEEDS TO BE PEGGED TO INTERNATIONAL POL PRICES. THERE IS NO QUESTION BUT THAT THE PRESENT PRICE REGIME FOR GAS IS TOO LOW. PRODUCER PRICES FOR NEW GAS FIELDS ARE INADEQUATE TO PROVIDE THE INCENTIVES NECESSARY TO INCREASE PRIVATE SECTOR ACTIVITY IN EXPLORATION AND DEVELOPMENT OF GAS FIELDS. THE INDIGENOUS PRIVATE SECTOR, IN COOPERATION WITH INTERNATIONAL FIRMS, IS DEMONSTRABLY CAPABLE OF EXPANDING PAKISTAN'S SUPPLIES OF NATURAL GAS. IT CAN DO SO ONLY WHEN PRICES ARE RIGHT AND WHEN THE FRAMEWORK FOR PRICING INSURES THAT THEY WILL CONTINUE TO BE RIGHT. USAID AND THE BANK HAVE AGREED THAT OUR STRATEGY FOR GAS PRICING IS TO PRESS THE GOP TO ADOPT A PRICING FORMULA WHICH IS PEGGED TO THE BORDER PRICE FOR FUEL OIL AND IS CALCULATED ON THE BASIS OF BTU EQUIVALENCY. IN OTHER WORDS, A FORMULA IN WHICH A GIVEN AMOUNT OF THERMAL ENERGY FROM GAS WOULD BE PRODUCER PRICED AT A KNOWN PERCENTAGE OF THE BORDER PRICE FOR THE AMOUNT OF FUEL OIL WHICH WOULD YIELD THAT QUANTUM OF THERMAL ENERGY. THE FORMULA WOULD HAVE TO PERMIT DISCOUNTS FROM THE BASE FOR LOCATION, GEOLOGY AND FIELD SIZE. AS WE KNOW FROM THE EXPERIENCE OF THE UNITED STATES, NATURAL GAS PRICING IS FAR TOUGHER TO WORK OUT THAN OIL OR ELECTRICITY PRICING, BUT, DIFFICULTIES NOTWITHSTANDING, USAID INTENDS TO FULLY SUPPORT THE

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BANK IN ITS EFFORTS TO LEAD THE GOP INTO THE PRODUCER PRICE REGIME OUTLINED ABOVE. ON THE CONSUMER SIDE, THE PROBLEMS ARE PARTICULARLY ACUTE. THE PRESENT CONSUMER PRICE TARIFF SO FAVORS GAS OVER OTHER FUEL SOURCES THAT IT DISTORTS INVESTMENT PATTERNS AND PERMITS NON-ECONOMIC USES OF GAS IN AN ENERGY SHORT NATIONAL ECONOMY. THE BANK'S STRATEGY IS A TWO STEP ONE IN THIS AREA. THEY HAVE ALREADY REACHED AGREEMENT WITH THE GOP ON A CONSUMER PRICE SCHEDULE WHICH WILL MOVE AVERAGE PRICES TO SIXTY SIX PERCENT OF THE BORDER PRICE OF FUEL OIL BY 1988. IT IS CLEAR, HOWEVER, THAT THIS SALUTARY FIRST STEP WILL STILL LEAVE AN UNACCEPTABLE LEVEL OF RELATIVE PRICE DISTORTION IN THE SYSTEM. USAID AND THE BANK AGREE THAT THE SECOND STEP IN THE PROCESS IS AN AGREEMENT ON A FIRM SCHEDULE FOR MOVING FROM SIXTY SIX PERCENT PARITY IN 1988 TO 100 PERCENT PARITY. THE BANK HAS NOT REACHED AGREEMENT WITH THE GOP ON THIS SECOND STEP, BUT THEY ARE PRESSING FOR FULL PARITY BY 1993.

USAID CONCURS ON THE IMPORTANCE OF BOTH THE PRINCIPLE OF PARITY BASED CONSUMER PRICES FOR NATURAL GAS AND ON THE IMPORTANCE OF REALIZING FULL PARITY THROUGH ADHERENCE TO A FIRM SCHEDULE OF PLANNED TARIFF INCREASES. SUCH A SCHEDULE CAN BEGIN TO INFLUENCE INDUSTRIAL AND COMMERCIAL USERS NOW BY GIVING THEM A

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CLEAR PICTURE OF THE SHAPE OF THE PRICE CURVE FOR GAS OVER THE NEXT TEN YEARS. IT IS USAID POLICY, AS IN THE CASE OF ELECTRICITY, TO LOOK TO THE GAS SPECIALISTS AND THE TARIFF EXPERTS IN THE BANK TO PLAY THE LEAD ROLE IN IMPLEMENTING THIS STRATEGY, WITH AID BEING A FORCEFUL ADVOCATE IN SUPPORT OF THE BANK AGENDA.

-- C. COAL PRICING. USAID HAS A KEEN INTEREST IN COAL PRICING BECAUSE OF OUR ROLE IN THE LAKHRA COAL FIRED GENERATION ACTIVITY IN PAKISTAN AND OUR LEADERSHIP IN THE DONOR EFFORT TO BRING PRIVATE SECTOR COAL MINING INTERESTS INTO THE FOREFRONT OF THE DEVELOPMENT AND OPERATION OF THE LAKHRA COAL FIELDS. THE COAL PRICE IN PAKISTAN IS QUITE DIFFERENT FROM THE PRICES WHICH OBTAIN IN GAS AND ELECTRICITY. THERE IS NOT, IN FACT, AN OFFICIAL PRICE SCHEDULE. THE SMALL PRIVATE PRODUCERS OF COAL SEEM CONTENT TO PERMIT THE PUBLIC SECTOR MINING COMPANY TO BE A PRICE LEADER. THE PUBLIC SECTOR FIRM IS BOTH INEFFICIENT AND UNDERMOTIVATED WITH THE RESULT THAT IT TAKES THE LEAD IN SETTING A HIGH PRICE WHICH THE PRIVATE SECTOR FOLLOWS. IN AN ENVIRONMENT WHERE BOTH GAS AND ELECTRICITY ARE UNDERPRICED, RELATIVE PRICE DISTORTIONS CONSTRAIN GROWTH IN COMMERCIAL COAL UTILIZATION. THIS LOW GROWTH IN UTILIZATION, IN TURN, CONSTRAINS INVESTMENT IN NEW MINING CAPACITY. THE SITUATION ROUGHLY APPROXIMATES THAT OF CARTEL PRICING AND PAKISTAN IS CONSEQUENTLY DEPRIVED OF FULL ACCESS TO AN IMPORTANT DOMESTIC ENERGY RESOURCE. USAID HAS DEVELOPED EXTENSIVE CONTACTS WITH THE PRIVATE SECTOR COAL MINING CONCERNS AND BELIEVES THAT ONE IMPORTANT INGREDIENT IN A STRATEGY FOR COAL PRICE RATIONALIZATION IS THE CREATION OF A MORE STABLE AND MORE SUBSTANTIAL FRAMEWORK FOR COMMERCIAL COAL DEMAND. VIRTUALLY NO LONG TERM SUPPLY CONTRACTS ARE LET IN THE COAL BUSINESS HERE, SO PRIVATE INVESTORS ARE LOATHE TO TAKE ON THE CAPITAL COSTS OF MINE IMPROVEMENTS AND EXPANSION. THE DEVELOPMENT OF PROPERLY MANAGED COAL FIRED ELECTRICITY GENERATION PLANTS, OPERATING IN A PRICE ENVIRONMENT OF LMC ELECTRICITY PRICES, WILL PERMIT EFFICIENT CONTRACTING ON A LONGER TERM BASIS FOR COAL AT FINANCIALLY AND ECONOMICALLY VIABLE PRICES. THE WORLD BANK IS PARTICIPATING WITH USAID IN A RANGE OF COAL SECTOR ACTIVITIES DESIGNED TO (A) PROMOTE PRIVATE SECTOR INVESTMENT (B) IMPROVE THE EFFICIENCY OF THE SUB SECTOR (C) MORE EFFECTIVELY DIRECT THE STRUCTURE OF DEMAND FOR COAL AND (D) IMPROVE RELATIVE PRICING OF COAL THROUGH THE PRICE INITIATIVES ON GAS AND ELECTRICITY OUTLINED ABOVE.

3. TO RECAP, AID'S OVERALL PRICING STRATEGY IN ENERGY IS TO SUPPORT MOVES TOWARD SECTORWIDE PRICES WHICH ARE EFFICIENT AND CONSISTENT WITH INTERNATIONAL ENERGY PRICES. WE SEEK BOTH AGGREGATE SHIFTS TOWARDS ECONOMICALLY EFFICIENT PRICES AND CHANGES IN RELATIVE PRICES WHICH WILL REDUCE AND ELIMINATE DISTORTIONS IN

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ENERGY USE AND IN ENERGY INVESTMENT. RECOGNIZING THE SUPERIOR TECHNICAL CAPACITY OF THE WORLD BANK TO DESIGN AND MONITOR ENERGY PRICE STRATEGIES, IT IS USAID'S POLICY TO USE OUR INFLUENCE WITH THE BANK TO INSURE THAT WE AND THEY ARE PURSUING COMMON GOALS, AND TO LEAVE THE BANK IN THE LEADERSHIP ROLE IN FORMULATING SPECIFIC PRICE PROGRAMS AND NEGOTIATING SPECIFIC TARIFF ADJUSTMENT SCHEDULES. FOR OUR PART, WE WILL CONTINUE TO PLAY THE LEAD ROLE ON ISSUES OF PRIVATIZATION IN THE ENERGY SECTOR, WHERE THE BANK'S MULTINATIONAL CONSTITUENCY SEEMS TO PRECLUDE A HARD LINE ON PRIVATE SECTOR ISSUES, AND ON INSTITUTIONAL AND MANAGERIAL REFORMS WHERE USAID'S ABILITY TO GRANT FINANCE PERMITS US FAR WIDER LEeway IN PACKAGING APPROPRIATE TECHNICAL ASSISTANCE IN THE ENERGY SECTOR. MOREOVER, THE ENERGY PLANNING AND DEVELOPMENT PROJECT IS REGARDED BY BOTH THE GOP AND WORLD BANK AS THE CENTER-PIECE OF INSTITUTIONAL REFORM IN THE ENERGY SECTOR. THIS PERCEPTION AND OUR PROSPECTIVE ROLE WILL ASSIST US TO PROVIDE LEADERSHIP IN THE CITED AREAS OF THE SECTOR.

4. THE APPROACH OUTLINED ABOVE PROVIDES A BASIS FOR A POWERFUL AND CONCERTED EFFORT BY THE KEY ENERGY SECTOR DONORS TO WORK ON A BROAD AGENDA OF SECTOR REFORMS IN ENERGY AND TO GUARD AGAINST THE HOST COUNTRY TAKING "DIVIDE AND CONQUER" TACTICS TO WEAKEN THE OVERALL POLICY DIALOGUE. TECHNICAL DIFFERENCES

ON GAS PRICING BETWEEN THE WORLD BANK AND THE ASIAN DEVELOPMENT BANK IN EARLIER YEARS PROVIDED SUCH A WEDGE FOR "DIVIDE AND CONQUER" TACTICS AND DELAYED PROGRESS TOWARDS THE MEDIUM TERM GAS PARITY PRICE TARGETS. IT IS IMPERATIVE THAT THE DONORS DO NOT STEP ON EACH OTHER'S TOES IN OUR ZEAL TO MAKE HEADWAY ON THESE ISSUES. A SOLID FRONT SUPPORTED BY FIRST CLASS TECHNICAL AND ECONOMIC ANALYSIS AND FULL AND FRANK DONOR COORDINATION IS THE KEY TO PROGRESS ON THIS FRONT. THE MISSION'S APPROVED CDSS CALLS FOR AN ENERGY SECTOR ASSESSMENT IN CY 1986. WE ANTICIPATE THAT THIS WILL BE DESIGNED TO INCORPORATE BROAD IPRD AND ADB PARTICIPATION IN A REVIEW OF PROGRESS ACROSS THE FULL SPECTRUM OF THE PRICE AND POLICY FRONT IN ENERGY. THE GOP'S PERFORMANCE AGAINST BANK DEVELOPED PRICE BENCHMARKS WILL BE AN IMPORTANT ELEMENT OF THE ASSESSMENT. THE POLICY SECTIONS OF OUR UPCOMING ECE PROGRAM WILL REFLECT THE POSITIONS OUTLINED IN THIS CABLE AND WILL PRESENT THE FULL RANGE OF SECTOR POLICY ISSUES RELATING TO PRICING, MANAGEMENT, POLICY ANALYSIS CAPABILITY, INVESTMENT STRATEGY AND ENHANCED PRIVATE SECTOR PARTICIPATION. BUREAU COMMENTS AND REACTIONS TO THIS CABLE WHICH COULD GUIDE OUR ECE DRAFTING ARE WELCOME. COMMENTS SHOULD BE SLUGGED FOR BLACKTON AND RECEIVED IN PAKISTAN NO LATER THAN JUNE 22, 1984 TO INSURE THAT THEY CAN BE FULLY TAKEN INTO ACCOUNT IN THE PAAD. HINTON

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AIDAC

FOR ASIA/PD MATHESON AND ACE PROJECT COMMITTEE

E.O. 12356 N/A

SUBJECT: ACE INTEREST RATES

REFS: (A) STATE 160238 (F) STATE 136812

1. THE MARCH MEMO FROM BLACKTON TO SMUCKER WAS INTENDED TO FRAME THE ISSUES RELATING TO INTEREST RATES IN THE ACE PROGRAM IN ADVANCE OF DETAILED DISCUSSIONS WITH GOP POLICY MAKERS IN THIS AREA. THE BACKGROUND INFO IN THE MEMO STANIS AS A DESCRIPTION OF THE BASIC STRUCTURE OF THE CREDIT SITUATION HERE. AS PROJECT NEGOTIATIONS PROGRESSED WE CONCLUDED THAT THE PRESENT STRUCTURE OF INTEREST RATES, WITH AN 11 PERCENT BASE AND A 3 PERCENT SURCHARGE FOR FX RISK WAS BOTH CONSISTENT WITH AID POLICY AND A REASONABLE STARTING POINT FOR OUR PRIVATE SECTOR WINDOWS IN ACE AND ECE. ALL DONOR FINANCED CREDIT PROGRAMS WORK THROUGH THIS INTEREST RATE SCHEDULE. UNTIL WE HAVE AN EMPIRICAL TRACK RECORD, WE HAVE NO BASIS FOR SEEKING AN EXCEPTION TO THE RATES. HAPPILY, THE RATES ARE HIGH ENOUGH AS TO AVOID THE PROBLEMS OF FACTOR PRICE DISTORTION WHICH ARE AT THE ROOT OF AID POLICY IN THIS AREA. THE APPROACH OUTLINED IN THE ACE PAAD IS THE SAME ONE WE PLAN TO TAKE IN THE ECE PAAD.

2. PARA FOUR OF REFTEL CORRECTLY PICKS UP A TYPO IN THE MARCH MEMO. YES, THIS SHOULD READ "MINIMUM" VICE "MAXIMUM". REQUEST THAT YOU MAKE CORRECTION ON PAGE 63 OF PAAD DOCUMENT.

3. REF P ASKED FOR EARLY WARNING IF USAID ANTICIPATED RECOURSE TO SUBSIDIZED INTEREST RATES IN ACE. ADHERENCE TO THE COMMERCIAL CREDIT RATES PROPOSED IN ACE PAAD WILL AVOID RISK OF FACTOR PRICE DISTORTIONS. WE WANT TO REASSURE YOU THAT WE ARE AS AVERSE TO UNDERPRICING OF CAPITAL AS IS WASHINGTON. AFTER THE FIRST YEAR OF THE ACE PROGRAM WE WILL BE IN A BETTER POSITION TO COMMENT ON THE RELATIONSHIP BETWEEN INTEREST RATES AND DISBURSEMENT RATES IN THE PROGRAM, BUT WE DO NOT INTEND TO LET DISBURSEMENT CONSIDERATIONS UNDERMINE SOUND POLICY CONSIDERATIONS.

4. REF A PROVIDES SOME SUGGESTED LANGUAGE FROM THE

PROJECT COMMITTEE EXPLAINING WHY THE FIRST YEAR OF A
PILOT PRIVATE SECTOR WINDOW SHOULD START WITH THE
EXISTING PRICING AND CREDIT SYSTEM. THIS LANGUAGE
REFLECTS THE INTENTION OF OUR PAAD AND WE HAVE NO
PROBLEM IN ADDING THE LANGUAGE YOU PROPOSE.

5. LASTLY, THE PROJECT COMMITTEE AND APAC SHOULD
REMEMBER THAT THERE WILL BE AN EVALUATION OF THE
PRIVATE SECTOR WINDOW IN CY 1985 PRIOR TO
FINALIZATION OF THE SECOND TRANCHE. INTEREST RATES
AND LOAN PROCEDURES WILL BE A KEY PART OF THIS
EVALUATION AND WE WILL INVITE AID/W PARTICIPATION.
THIS IS DISCUSSED IN PAAD BEGINNING ON PAGE 79.

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AIDAC

FOR ASIA/PD PAT MATHESON AND ACE PROJECT COMMITTEE

E.O. 12356 N/A
SUBJECT: PROJECT 391-0488: ACE LOCAL CURRENCY
GENERATIONS

REFERENCE: (A) STATE 161663 (B) STATE 066395 (84)
(C) 02077 (84) (D) LION/FISCHER LETTER DATED DEC 21,
1983

1. REF A ASKS FOR RATIONALE BEHIND MISSION'S DECISION
NOT TO PROVIDE FOR PROGRAMMING OF LOCAL CURRENCY
GENERATIONS FROM ESF LOAN FINANCED COMMODITIES AND
GOES ON TO ASK SPECIFICALLY WHY WE ARE NOT PROVIDING
FOR SPECIAL ACCOUNT TREATMENT OF PROCEEDS FROM
PURCHASE OF COTTON UNDER FY 84 TRANCHE OF ACE.

2. THE SHORT ANSWER TO BOTH QUESTIONS IS THAT THE
SPECIAL ACCOUNT APPROACH SIMPLY DOESN'T WORK IN
PAKISTAN. THE GOP BUDGET IS A CONSOLIDATED OPERATION
WITHOUT EARMARKING. WHILE THEY ARE PERFECTLY WILLING
AND ABLE TO CREATE AN ACCOUNT NUMBER FOR COUNTERPART
GENERATIONS AT THE CENTRAL BANK, WHAT ACTUALLY HAPPENS
IS THAT DISBURSEMENTS ARE MADE ON A NON-EARMARKED
BASIS. UNDER A SITUATION OF PERENNIAL DEFICIT
FINANCING THIS MEANS THAT OUR COUNTERPART IS
EFFECTIVELY SPENT EVEN BEFORE IT IS GENERATED.

3. THE MISSION HAS PRESENTED THESE ISSUES TO
WASHINGTON IN A SERIES OF COMMUNICATIONS DATING BACK
TO 1983. REF D FROM DONOR LION TO FRED FISCHER WAS
THE BASIS OF AN INTERAGENCY AID/USDA/OMF DETERMINATION
THAT WE WILL NO LONGER PROGRAM TITLE ONE GENERATIONS.

4. AID'S POLICY DETERMINATION NUMBER FIVE OF FEBRUARY
1983 MAKES CLEAR THAT THE IMPORTANT ISSUE IS NOT THE
FACT OF PROGRAMMING, BUT THE ASSURANCE THAT AID GAINS
APPROPRIATE VOICE IN THE AREA OF RESOURCE ALLOCATION
POLICY IN THE RECIPIENT COUNTRY. OUR OVERALL APPROACH
TO LOCAL CURRENCY GENERATIONS IS BUILT AROUND THIS
CORE PRINCIPLE IN PD NUMBER FIVE. IN LIEU OF A
"PROGRAMMING" ACTIVITY WITH A "SPECIAL ACCOUNT" WHICH
WE KNOW LEADS TO MEANINGLESS ATTRIBUTIONS OF
EXPENDITURE ON AN EX-POST BASIS, WE COMBINE OUR
RESOURCE TRANSFER PROGRAMS INTO A BROAD PLATFORM FOR
REGULAR BUDGET AND RESOURCE ALLOCATION DISCUSSIONS
WITH THE GOVERNMENT OF PAKISTAN. THESE DISCUSSIONS

ARE CONDUCTED BOTH BY THE DIRECTOR AT APPROPRIATELY HIGH LEVELS IN THE GOP AND BY THE SENIOR STAFF OF THE MISSION WITH THEIR COUNTERPARTS IN THE ECONOMIC AFFAIRS DIVISION OF THE MINISTRY OF FINANCE.

5. THE COMBINATION OF COMMODITY IMPORT AND TITLE ONE PROGRAMS WHICH TOUCH DIRECTLY UPON:

- (A) AGRIBUSINESS
- (B) THE FERTILE OIL INDUSTRY
- (C) PRIVATE SECTOR ENERGY INVESTORS
- (D) PUBLIC SECTOR ENERGY UTILITIES
- (E) THE PUBLIC AND PRIVATE FERTILIZER INDUSTRY

GIVES US A POWERFUL PASH FOR MEANINGFUL POLICY DIALOGUE ON RESOURCE ALLOCATIONS. WE HAVE A PLACE AT THE TABLE ON QUESTIONS SUCH AS CLOSING OUT THE MASSIVE FERTILIZER SUBSIDY ELEMENT OF THE GOP BUDGET, SHIFTING INVESTMENT RESOURCES AWAY FROM AGRIBUSINESS FUNCTIONS BEST UNDERTAKEN BY PRIVATE FIRMS, OR PROTECTING RESOURCE ALLOCATIONS FOR AGRICULTURAL AND ENERGY SECTOR RESEARCH PRIORITIES WHICH MAY BE THREATENED IN TIMES OF FISCAL SQUEEZE. USAID FINDS THAT THE ACCESS WHICH WE ENJOY ON THESE IMPORTANT RESOURCE ALLOCATION TOPICS AS A RESULT OF OUR APPROACH TO LOCAL CURRENCY GENERATIONS IS FAR MORE VALUABLE THAN AN ORCHESTRATED ROLE IN AN ANNUAL, EX-POST, ALLOCATION EXERCISE WITH THE MINIFINANCE BUDGETERS. THIS SHIFT IN PROGRAMMING APPROACH HAS STRENGTHENED NOT WEAKENED OUR OVERALL POLICY DIALOGUE WITH THE GOVERNMENT OF PAKISTAN.

6. THE CASE FOR AN APPROACH WHICH IS SERIOUS AND ACTIONABLE VERSUS AN APPROACH WHICH IS DEMONSTRABLY WITHOUT SUBSTANCE WAS UNDERSTOOD AND ACCEPTED BY ALL THE AGENCIES CONCERNED WITH OUR DOLS FIFTY MILLION PER YEAR TITLE ONE PROGRAM. WE BELIEVE THAT THE ARGUMENTS APPLY WITH ABSOLUTELY THE SAME FORCE AND VALIDITY TO LOCAL CURRENCY GENERATIONS FROM LOAN FINANCED COMPETITORS IN ACF AND ECE. WE ARE CONFIDENT THAT PROJECT COMMITTEES AND APAC WILL COME TO THE SAME CONCLUSION. RATTRAY

BT

#2099

MEMORANDUM

May 22, 1984

TO: USAID, Frank R. Kimball

FROM: AAF/ASIA, Charles W. Greenleaf

SUBJECT: PAKISTAN PID - Energy Commodities and Equipment Program
→ (391-0486) (ECE)

Reference: Your Memorandum of May 14, 1984

Policy dialogue is indeed at the heart of our proposed ECE program. The Mission and Asia Bureau are in full agreement on the critical link between GOP energy policies and achievement of our objectives. Our staff has provided continuous assistance and guidance to the Mission in developing its approach to policy in ECE. We have worked closely with GOP officials and with the other major donors to assure that we reinforce the GOP's own efforts to carry out policy reforms.

In designing the ECE project, the Mission, with the assistance of Arthur D. Little, is actively exploring policy issues in oil and gas, coal, conservation, and renewable energy fields. The PID cable lists many of the major areas of concern in paragraph III C. The APAC cable requests a comparative analysis in the FAAD of potential policy and private sector targets and of impacts of commodity assistance in each area.

The attached paper on "Policy and Institutional Considerations for the Energy Commodity Program" provides some of the Mission's early thinking on policy objectives. Pages 19-20 list some of the major sectoral issues from which specific program objectives will be developed. Of course our efforts to influence this broad range of concerns are not confined to discussions of ECE; our ongoing Rural Electrification and Energy Planning projects and the proposed Lakhra project together give us a position from which to address the sector as a whole.

On these sectoral as well as cross cutting issues like energy product pricing (electricity, gas, oil) Pakistan and the Mission staff are working closely with the World Bank, which at the direction of Ernie Stern is completing a detailed policy review of the entire energy sector. Bank officials are presently preparing a list of policy reforms that will be the subject of negotiation with the GOP during a visit this month on a proposal

energy sector loan. Indications are they will push for price increases beyond those included in the previous IMF agreement. The ECE project will thus be in a position to support appropriate elements of the Bank's policy approach. The APAC cable requests that the PAAD include the implications of discussions with the World Bank teams for the Mission's negotiating positions on the ECE project.

ASIA Bureau, S&T/EY and PPC staff have worked closely with the Mission on identification of issues, selection of consultants, development of scopes of work, and coordination with the World Bank, and will continue to do so, so that AID/W concerns are fully brought to bear in the design process. We would welcome any specific suggestions or guidance you may want to add.

Attachment: Policy and Institutional Considerations for the
Energy Commodity Program

psm *elam/rz*
Drafted: ASIA/PD/SA:PSMatheson/ASIA/TR:Ichord:pw:5/21/84:29000

Clearance: ASIA/PNS:DMutchler (draft)
ASIA/PD/SA:HSharlach *HS*
A/ASIA/PD:RPratt *RP*
DAA/ASIA:ESTaples *ES*

1730

MAY 13 1984

May 4, 1984

FORWARDED-
THE AGENCY

MEMORANDUM

TO: AA/ASIA, Charles W. Greenleaf

FROM: C/AID, Frank Kimball *FK*

SUBJECT: Asia Bureau Review of Pakistan PID-Energy
Commodities and Equipment Program (391-0486)

I have reviewed the PID and discussed its policy implications with Peter. Given the size of the proposed obligation and the apparent policy issues which exist in the energy sector (for example, the underpricing of energy products), we start with the assumption that the ECE program can be used to influence GOP policies in the oil and gas sub-sector. Part of the design work for the proposed program should be spent determining which specific policies we want to influence and how best to proceed. Will the Asia Bureau be providing the Mission any guidance in this area?

ASIA BUREAU

ACTION *ASIA/PO* -----
 DUE *5/18* -----
 FILE -----
 INFO *OA, DEG, SA, TR, PMS* -----

72020110163
 #P RUMHIL
 DE RUHHC #6312/01 1310613
 ZNR UUUU ZZH
 P 12355Z-MAY-84
 FM SECSTATE WASHDC
 TO AMEMBASSY ISLAMABAD PRIORITY 6953
 ET

UNCLAS STATE 130812

AIDAC

E.O. 12356: N/A

TAGS:

SUBJECT: ENERGY COMMODITIES AND EQUIPMENT (391-0436)

REF: ISLAMABAD 3550

APAC REVIEWED AND APPROVED REF PID CABLE MAY 2.
 FOLLOWING "A" LEVEL ISSUES WERE DISCUSSED:

1) PROGRAM VS. PROJECT FOCUS: WE UNDERSTAND FROM PID CABLE, DRAFT MATERIALS ON ACE PRIVATE SECTOR CIP MECHANISM AND VON SPIEGELFELD TDY THAT MISSION INTENDS A TRADITIONAL PRIVATE SECTOR CIP WINDOW IN WHICH PARTICIPATING BANKS SELECT BORROWERS AND ENSURE COMPLIANCE WITH REGS. AID NEED NOT BE ACCOUNTABLE FOR USE, MAINTENANCE, INSTITUTIONAL AND FINANCIAL CAPACITY OF BORROWERS, ETC., BECAUSE MARKET MECHANISMS AND BANKS' ROLE OFFER ALTERNATIVE PROTECTION.

WE ARE LESS CLEAR ON HOW THE PUBLIC SECTOR WINDOW WOULD OPERATE AND INFER THAT MISSION MAY BE PLANNING TO TARGET AT LEAST PART OF SUCH FUNDS ON SPECIFIC ENTITIES (E.G., WAPDA) OR PROJECTS WITH CLEARLY IDENTIFIED END-USERS AND NEEDS. TO EXTENT THAT PAAD OBJECTIVES ARE DEFINED AS

MEETING THESE SPECIFIC PROBLEMS, WITH USAID HAVING AUTHORITY TO DIRECT RESOURCES TO NAMED END USERS, ACTIVITY WOULD APPEAR TO BE BASED MORE UPON PROJECT RATHER THAN CIP PURPOSES. IN SUM, THE MORE OUR FUNDS ARE USED LIKE THESE FOR A PROJECT THE MORE WE WILL HAVE TO MEET THE PLANNING AND ACCOUNTABILITY CRITERIA THAT WE NORMALLY USE IN PROJECT DESIGN, IMPLEMENTATION, AUDITING AND EVALUATION.

WE ARE NOT NECESSARILY IMPLYING THAT WE SHOULD AVOID SUCH TARGETTING AS LONG AS SOME PRUDENT LEVEL OF MONITORING, WHICH YOU CONSIDER APPROPRIATE, IS UTILIZED. TO THE EXTENT ONE WISHES TO AVOID THE PROBLEM, LIMITATION OF DOLLAR VALUE OF TRANSACTION TO DOLS 500,000, AS IS PLANNED IN PRIVATE SECTOR WINDOW MAY, IF APPROPRIATE, LESSEN THE BURDEN. LIKEWISE, IF PUBLIC ENTITIES WOULD BE OBTAINING REQUIRED COMMODITIES THROUGH PRIVATE IMPORTERS OR NATIONAL DEVELOPMENT BANKS

WITHOUT A.I.D. DIRECTION TO SPECIFIC END-USES, WE WOULD NOT HAVE THIS PROBLEM. IN SHORT, WE SIMPLY WANT TO BE SURE MISSION AWARE OF THIS ASPECT OF DESIGN AND IMPLEMENTATION IN PREPARING PAAD.

2) MARKET INTEREST RATES: REEDEL'S DESIGN ISSUE (C) AND MARCH 4, 1984 BLACKTON-SMUCKER MEMO RAISE POSSIBILITY OF SUBSIDIES IN INTEREST RATES. WE FULLY CONCUR WITH THE OBJECTIVES DESCRIBED IN THE BLACKTON MEMO, NAMELY, TO INCORPORATE FULL COSTS OF CAPITAL AND AVOID MISALLOCATION OF INVESTMENT THROUGH WRONGLY PRICED CAPITAL. UNDERSTAND ANALYSIS DONE TO DATE INDICATES LIKELY STRONGER DEMAND FOR US PRODUCTS IN THE ENERGY SECTOR THAN APPEARS TO BE THE CASE IN THE ACE PROGRAM SO THAT IT SHOULD BE LESS OF A PROBLEM TO DISBURSE FUNDS IN ECE. WE WELCOME ANALYSIS OF THE COMPLEXITIES OF THE PAKISTAN DOMESTIC CREDIT SYSTEM AND DESCRIPTION OF EXTENT TO WHICH THIS PROGRAM WOULD CONCERN ITSELF WITH THAT SYSTEM, IF AT ALL. SINCE THIS PROGRAM IS TO BE INCREMENTALLY FINANCED, IT WOULD SEEM APPROPRIATE TO START WITH THE PREVAILING CREDIT SYSTEM IN THE FIRST YEAR, TEST THE MARKET, AND ONLY CONSIDER MODIFICATIONS IF EARLY EXPERIENCE INDICATES THIS IS NECESSARY. IF YOUR ANALYSIS IS NOW CLEARLY LEADING TOWARDS SUBSIDIZED RATES, WHICH IS PLAINLY CONTRARY TO AGENCY POLICY, WE REQUEST AN EARLY CABLE EXPLAINING THE RATIONALE PRIOR TO SUBMISSION OF PAAD.

3) TARGETING ON ENERGY SUBSECTORS: IN DECIDING THE DEGREE TO WHICH THE PROGRAM WILL SEEK TO DIRECT

FINANCING INTO ONE OR ANOTHER OF THE FIVE IDENTIFIED SUBSECTORS, MISSION SHOULD TAKE INTO ACCOUNT THE FOLLOWING FACTORS: A) WHAT IS THE ENERGY IMPACT OF COMMODITIES PROVIDED IN THIS AREA? B) IS FOREIGN EXCHANGE AN IMPORTANT CONSTRAINT TO COMMODITY IMPORTS IN THIS AREA? C) WOULD FINANCING IN THIS AREA REINFORCE POLICY OBJECTIVES? D) WOULD IT PROMOTE DEVELOPMENT OF THE PRIVATE SECTOR? IT MAY PROVE DESIREABLE INITIALLY TO FOCUS ON SUB-SECTORS WITH GREATEST IMPACT (CONSERVATION) WHILE RETAINING FLEXIBILITY TO MOVE INTO OTHERS IF DEMAND PROVES INADEQUATE. THESE FACTORS MAY ALSO BE USEFUL AS SELECTION CRITERIA FOR BANKS IN CONSIDERING SUB-BORROWERS. REQUEST THAT PAAD INCLUDE COMPARATIVE ANALYSIS OF THE SUB-SECTORS WITH REGARD TO THESE FACTORS TO ESTABLISH PRIORITIES FOR PURPOSES OF ALLOCATIONS.

4) OTHER DESIGN GUIDANCE:

1) REQUEST THAT PAAD ELABORATE ON LINKAGES WITH OTHER ENERGY-RELATED PROJECTS TO SHOW COMPLEMENTARITY OF

POLICY AND OTHER OBJECTIVES IN THE SECTOR.

B) RE REFTEL DESIGN ISSUE A, AA/ASIA VIEW IS THAT OIL AND GAS DRILLING IS NOT APPROPRIATE AREA FOR AID CONCESSIONAL FINANCING AND THIS PROGRAM SHOULD NOT BE USED TO FINANCE DRILLING EQUIPMENT EITHER DIRECTLY OR INDIRECTLY.

C) REQUEST PAAD INCLUDE ANALYSIS OF OPERATION AND MAINTENANCE (O AND M) HISTORY OF SIMILAR EQUIPMENT IN PAKISTAN, PROBLEMS THAT COULD ARISE WITH AID-FUNDED EQUIPMENT AND MEANS FOR ADDRESSING SUCH PROBLEMS, IF SIGNIFICANT, INCLUDING TECHNICAL ASSISTANCE. LIMITED AMOUNT OF VENDOR TRAINING FOR INSTALLATION AND OPERATION OF EQUIPMENT CAN BE PROVIDED UNDER CIP. SOME REQUIREMENTS COULD PROBABLY BE PROVIDED THROUGH EXISTING ENERGY PROJECTS OR BY OTHER DONORS.

D) MISSION SHOULD CONTINUE CLOSE CONSULTATION WITH WORLD BANK OFFICIALS ON ENERGY POLICY REVIEW CURRENTLY IN PROGRESS. BANK IS PLANNING MISSION IN LATE MAY TO INITIATE DISCUSSIONS ON KEY POLICY REFORM ISSUES. PAAD SHOULD IF POSSIBLE INCLUDE RESULTS AND IMPLICATIONS OF THESE DISCUSSIONS.

SHULTZ

BT

#6812

12 APR 1984

Dear Mr. Minister:

I would like to take this opportunity to review with you the progress we have made in responding to your request for AID financial assistance in the oil and gas sector. Secretary General Ejaz Haik asked for an update on this issue during his recent visit to Washington.

In the months since I received your request for U.S. financing of oil and gas drilling rigs, the staff of the Agency for International Development and our USAID Mission in Islamabad have collaborated with the major concerned agencies of the Government of Pakistan in a broad review of the possibilities for AID financing of commodities and equipment requirements associated with the energy sector programs in Pakistan's Sixth Five Year Plan. This effort, undertaken in close consultation with Secretary Haik and the Economic Affairs Division, has led to a preliminary recommendation for a multi-year program of energy sector commodity financing. In the oil and gas sector the recommendations center upon support to Pakistan's strong new initiatives to expand private sector involvement in exploring for and developing additional petroleum reserves and for assisting Pakistan's Oil and Gas Development Corporation (OGDC) to carry out the seismic and analytical work which is crucial to stimulating broadened private sector participation in exploration and development.

The proposal differs in some measure from the initial request, primarily in that AID shares with the World Bank and others a firm commitment to defining public and private sector roles in petroleum development in ways which assign operational tasks such as drilling to the private sector and assign to the public sector those tasks which are inappropriate for private undertaking. We cannot, therefore, include drilling rigs for OGDC at this time. If and when an appropriate private sector drilling program is developed by the OGDC we could reopen

The Honorable Ghulam Ishaq Khan
Minister of Finance
Islamabad, Pakistan

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consideration of this request in the context of the Energy Commodities and Equipment program. We do see some areas for financial support to OGDC this year. Our technical staff, working with the OGDC in Pakistan, has developed a preliminary list of seismic and other equipment totalling some \$7 to \$10 million which would support the OGDC's important role in developing basic data to guide oil and gas exploration activities.

My staff has prepared a project proposal for a multi-year program of U.S. financing for energy sector equipment which would run from 1984 through 1987 or 1988. The object of the program would be to permit the purchase of equipment and commodities directly linked to the goals and priority activities of the Sixth Five Year Plan for the energy sector. The program would encompass financing for both public and private sector entities and would be built around a structured and ongoing USG/GOP discussion of sectoral policy and sectoral strategy. I am pleased that the Sixth Five Year Plan emphasizes the importance of mobilizing private sector resources and private sector technical know-how to support Pakistan's ambitious energy objectives. While the AID financing program is not yet in final form and has not yet been formally approved, I believe that it can serve as a very important financial tool in assisting Pakistan to meet priority objectives in this sector. Donor Lion will be reviewing the proposal again with you and others in the Government of Pakistan in the coming weeks. I look forward to continuing our personal dialogue on energy issues when you are next in Washington.

Sincerely,

/s/ M. Peter McPherson

M. Peter McPherson

cc: Minister of Planning and Development
Dr. Mahbub ul Haq
Secretary General Economic Affairs Division
Mr. Ejaz Ahmed Naik

Clearances:

- ASIA/PNS: FCFischer _____
- ASIA/PNS: DEMutchler _____
- USAID/I: DLion (draft) _____
- ASIA/DP: LCrاندall _____
- ASIA/TR: Richard (INFO) _____

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OBJ: PAKISTAN

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

IF Due 5/3/83
ACTION: AA/ASIA for McPherson sig.
Info: McPherson/Morris/Kimball/Oliver/
Pagano/ES logs(o)
AA/PPC, AA/S&T



APR 22 3 29 PM '83
AID
EXECUTIVE SECRETARIAT

Minister for Finance
Government of Pakistan
Islamabad

Dated the 12th April, 1983
ASIA BUREAU

ACTION ASIA/PNS
DUE 5/2
FILE
INFO ASIA/TR-PD

Dear Mr. McPherson,

As you know, the Government of Pakistan assigns a very high priority to the energy sector. Investment in energy in the Sixth Five Year Plan will account for 35 to 40 percent of planned investment over the plan period.

2. This priority reflects the difficult situation Pakistan is facing, with energy shortages and load shedding likely to be with us for some time. The energy gap must be closed if growth and development are to proceed satisfactorily, if our social sector objectives are to be attained, and if economic stability is to be assured.

3. We are hoping that, within the bilateral programme we negotiated, A.I.D. can work with us as a major partner in the energy sector. A.I.D. is already making an important contribution by participation in our Rural Electrification Project. I am also aware of two other proposed A.I.D. projects, Energy Planning and Development and Forestry Development, which will represent very welcome additional assistance to the energy sector.

4. Beyond these valuable activities, I would like to urge your favourable consideration of two other projects : (1) Lakhra Coal/Power (2) Energy Commodities and Equipment.

5. To date, A.I.D. has been instrumental in assisting the Government of Pakistan in developing the

Lakhra project. The economic and technical analysis which A.I.D. has financed has significantly helped us in project development and we expect to be seeking funds from public and private sources during the next financial year to cover the costs of this major coal/power project. Lakhra promises to exploit indigenous coal resources, provide employment as well as opportunities for the private sector, contribute (in its first stage) to a 300 megawatt reduction in our power gap and save at least \$ 50 to \$ 60 million annually in oil imports beginning in 1987/88. The Government of Pakistan requests that A.I.D. continue to finance the engineering costs of this project and also to finance a portion of the capital costs. We are also examining, as I mentioned above, the possibilities of financing from other public as well as private sources. I am hoping that USAID will continue to lend its support to Lakhra Coal/Power Project along with other urgent energy projects in our Sixth Five Year Plan.

6. The Government of Pakistan, hopefully with an increasing role of the private sector, domestic and foreign, needs to accelerate the pace of exploration and development of domestic sources of natural gas and oil. In addition to equipment needed to develop our coal resources, we urgently require equipment to implement a programme of deep drilling for oil and gas. I would like to propose that we develop, with A.I.D., an energy programme which would parallel the Agricultural Commodities and Equipment Programme already signed with the U.S. Government. This programme would finance the importation of deep drilling rigs, spare parts, coal

Contd...p/3

equipment and related commodities. The Agricultural Commodities and Equipment Programme is working very well and a similar activity in the energy sector would represent an invaluable contribution to our energy and balance of payments requirements as well as to other goals, for example, the growth of the private sector and overall national development.

7. I shall be grateful to know if A.I.D. will support us in these efforts.

With kind regards,

Yours sincerely,

(GHULAM ISHAQ KHAN)

Mr.M.Peter McPherson,
Administrator,
Office of the Administrator,
Agency for International Development,
Room No. 5942,
Washington D.C. 20523,
U.S.A.

~~THE ADMINISTRATOR~~

MAY 20 1983

Dear Mr. Minister:

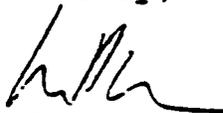
Thank you for your letter of April 12, 1983 with respect to potential support from the Agency for International Development for two proposed projects: (1) Lakhra Coal/Power, and (2) Energy Commodities and Equipment.

I can assure you that each of these proposed projects will receive a timely and thorough review from Agency staff, after which we will be able to advise you on the prospects for AID support.

With respect to the Lakhra Coal/Power project, we are in receipt of the recent Stone and Webster report which gives an appraisal of its technical, economic and financial feasibility. At your Government's request, copies of the report have been passed to World Bank staff who indicate that they will conduct an expeditious review.

With kind regards.

Sincerely,


M. Peter McPherson

His Excellency Ghulam Ishaq Khan
Minister of Finance
Government of Pakistan
Islamabad

Government of Pakistan
Ministry of Finance & Economic Affairs
(Economic Affairs Division)

No.1(4)SO(DR)/82.

Islamabad, the 2nd September, 82.

OFFICE MEMORANDUM

Subject:- MODIFICATION OF RELENDING INTEREST RATES
OF FOREIGN LOANS AND CREDITS.

The undersigned is directed to invite attention to this Division's O.M. noted in the margin on the subject noted above and to state that the relending interest rates of foreign loans and credits have been modified as under :-

- | | |
|--|---|
| 1) Foreign loans relent to the Departments of Federal or Provincial Governments for which no commercial accounts are maintained. | Foreign loans obtained by the Federal Government and relent to the Provincial Governments would continue to be passed on the same terms at which these have been borrowed.. |
| 2) Foreign loans relent to the Departments of Federal or Provincial Governments for which commercial accounts are maintained. | 11% p.a. inclusive of exchange risk charge.. |
| 3) Foreign loans relent to Autonomous Bodies/Corporations of the Federal and Provincial Governments: | |
| a) Projects of public utilities. | 11% p.a. inclusive of foreign exchange risk charge.. |
| b) Projects other than public utilities. | 14% p.a. inclusive of exchange risk charge . |
| 4) Foreign loans relent to Financial Institutions (IDBP, PICIC, NDFC and Bankers Equity Limited). | 11% p.a. inclusive of exchange risk charge..
The relending rate to the final borrower will be 14% p.a. inclusive of exchange risk charge. If as a result of higher spread demanded by the creditors, the interest rate to the final borrower exceeds 14% p.a., the excess will be passed on to the final borrower. |

Letters no. and Date.
No.3(1)SO(DR)/74-II dated 24-9-1975.
No.1(5)SO(DR)/75-II dated 11-11-1980.

...../P-

- : 2 : -

5) Direct borrowings inclusive of Suppliers Credits/Guaranteed Loans.

An option would be given to the borrower either to bear exchange risk or pay 3% commission to the Government for taking over exchange risk. The guarantee commission of 1% would continue to be charged by the Federal Government as at present.

2. The revised relending terms would be effective from 16th May, 1982 on new sanctions (allocations) and the loans relating earlier or old sanctions would continue to be regulated by orders already in force. The concerned provisions embodied in O.Ms. noted in the margin would be deemed to have been amended accordingly.

3. The requests for exemption would be put up to E.C.C. of the Cabinet.

(Handwritten signature)
(Makhdoom H. Chaudhri)
Deputy Secretary
Tel; 26459

1. Finance Division (Mr. Mohammad Iqbal Hussain, Deputy Secretary) External Finance Wing, Islamabad.
2. Finance Division (Mr. Ahmad Hussain Qureshi, Deputy Secretary) Budget Wing, Islamabad.
3. Finance Division (Mr. Khizar Ahmad Jan, Deputy Secretary), Investment Wing, Islamabad.
4. Planning Division, Islamabad.
5. Industries Division, Islamabad.
6. Production Division, Islamabad.
7. Auditor General of Pakistan, Lahore.
8. Chairman, A. D. B. P., Islamabad.
9. Chairman, P. I. C. I. C., Karachi.
10. Chairman, I. D. B. P., Karachi.
11. Chairman, N. D. F. C., Karachi.
12. Financial Advisors of the Ministries & Divisions of Federal Government and Finance Member of Autonomous Bodies/Corporations.
13. A. G. P. R., Islamabad.
14. All Divisions of the Government of Pakistan. (not mentioned above).
15. State Bank of Pakistan, Central Directorate, (Foreign Exchange Department), KARACHI.
16. Cabinet Division, Rawalpindi.
17. Joint Secretary (BK), Economic Affairs Division, Islamabad.
18. Joint Secretary (CM), Economic Affairs Division, Islamabad.
19. Joint Secretary (IC & NC) E. A. D., Islamabad.
20. DS (CM), EAD, Islamabad
21. DS (BK), EAD, Islamabad
22. DS (NC), EAD, Islamabad
23. DS (IC), EAD, Islamabad
24. All Sections concerned of Economic Affairs Division.

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Annex B

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
MISSION TO PAKISTAN

Cable : USAIDPAK

HEADQUARTERS OFFICE
ISLAMABAD

THE DIRECTOR

ENERGY COMMODITIES AND EQUIPMENT PROGRAM (391-0486)

FAA SECTION 611(e) CERTIFICATION

I, Donor M. Lion, the principal officer of the Agency for International Development in the Islamic Republic of Pakistan, having taken into account, among other things, the maintenance and utilization of projects in the Islamic Republic of Pakistan previously financed or assisted by the United States, do hereby certify, pursuant to Section 611(e) of the Foreign Assistance Act of 1961, as amended, that, in my judgment, the Islamic Republic of Pakistan has both the financial capability and the human resources capability to effectively implement, utilize, and maintain the proposed Energy Commodities and Equipment Program (391-0486).

This judgment is based upon the project analyses as detailed in the Energy Commodities and Equipment Program Assistance Approval Document (PAAD) and is subject to the conditions imposed therein.

Donor M. Lion

Donor M. Lion
Mission Director
USAID/Pakistan

3 July 1984

Date

PROJECT CHECKLIST

Listed below are statutory criteria applicable generally to projects with FAA funds and project criteria applicable to individual funding sources: Development Assistance (with a subcategory for criteria applicable only to loans); and Economic Support Fund.

CROSS REFERENCE: IS COUNTRY CHECKLIST UP TO DATE? Yes

HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT? Yes

A. GENERAL CRITERIA FOR PROJECT

1. Continuing Resolution Unnumbered; FAA Sec.634A; Sec.653(b)

(a) Describe how authorizing and appropriations Committees of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than \$1 million over that amount)?

(a) Congressional Notification and Congressional Presentation.
(b) Yes, assistance is within the FY 1984 operational year budget.

2. FAA Sec.611 (a) (1): Prior to obligation in excess of \$100,000, will there be (a) engineering, financial other plans necessary to carry out the assistance, and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

(a) Yes
(b) Yes

(2)

3. FAA Sec.611 (a) (2): If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?
- No further legislative action is required.
4. FAA Sec.611 (b) : Continuing Resolution Sec.501. If for water or water-related land resource construction, has project met the standards and criteria as set forth in the Principles and Standards for Planning Water and Related Land Resources, dated October 25, 1973?
- N.A.
5. FAA Sec.611 (e). If Project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed \$1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project?
- Yes, Mission Director's 611(e) certification is included in the Project Paper.
6. FAA Sec.209. Is project susceptible of execution as part of regional or multi-lateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.
- No. This project is highly Pakistan-specific and hence is not susceptible to execution as a part of a regional project, nor will it likely encourage regional development programs. Nevertheless, the IBRD and ADB will be implementing energy sector programs during the life of the AID program, and the latter has been designed to complement and reinforce the activities of these two donors.

(3)

7. FAA Sec. 601 (a). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, and credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and, (f) strengthen free labor unions.
- This program will:
- (a) have a moderate increase on the flow of international trade in energy-related equipment;
 - (b) increase the country's efforts to foster private initiatives among the public and private sector end users of the commodities;
 - (c) have no impact on the use of cooperatives and savings and loan associations;
 - (d) have positive impact on the market practices of Pakistan;
 - (e) significantly improve the technical efficiency of the energy sector of the economy; and,
 - (f) will not strengthen free labor unions.
8. FAA Sec. 601 (b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).
- U.S. private enterprises will participate as suppliers of both goods and services under this project.
9. FAA Sec. 612 (b), 636 (h) : Continuing Resolution Sec. 503. Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized in lieu of dollars.
- This is an ESF-funded commodity import program which is designed to favorably impact on Pakistan's balance of payments. Other than possibly local costs of inland transportation for imported commodities and related commodity procurement costs, no local costs are involved in this program. Rupees may be generated from the sale of commodities and will accrue to the GOP through paybacks of the loans to the private sector, and these rupees will be used by the GOP to support development activities.
10. FAA Sec. 612 (d). Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release?
- Yes, but U.S. owned excess Pakistani rupees have been fully programmed in support of other projects.

(4)

11. FAA Sec.601 (e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise? Yes

12. Continuing Resolution Sec.522. If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar or competing commodity? N.A.

13. FA Appropriation Sec.525: Will the funds for this project be used to lobby for abortion? No

b. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria This is an ESF-financed project.

a. FAA Sec.102 (b), 111, 113, 281(a). Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technolog, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained basis, using the appropriate U.S. institutions; (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better N.A.

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(5)

life, and otherwise encourage democratic private and local governmental institutions; (c) support the self-help efforts of developing countries; (d) promote the participation of women in the national economics of developing countries and the improvement of women's status; and, (e) utilize and encourage regional cooperation by developing countries.

N.A.

b. FAA Sec.103, 103A, 104, 105, 106, 107. Is assistance being made available: (including only applicable paragraph which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source).

N.A.

(1) [103] for agriculture, rural development of nutrition; if so (a) extent to which activity is specifically designed to increase productivity and income of rural poor; 103A if for agriculture research, full account shall be taken of the needs of small farmers, and extensive use of field testing to adapt basic research to local conditions shall be made; (b) extent to which assistance is used in coordination with programs carried out under Sec.104 to help improve nutrition of the people of developing countries through encouragement of increased production of crops with greater nutritional value, improvement of planning, research, and education with respect to nutrition, particularly with reference to improvement and

N.A.

(6)

expanded use of indigenously produced foodstuff; and the undertaking of pilot or demonstration of programs explicitly addressing the problem of malnutrition of poor and vulnerable people; and (c) extent to which activity increases national food security by improving food policies and management and by strengthening national food reserves, with particular concern for the needs of the poor, through measures encouraging domestic production, building and national food reserves, expanding available storage facilities, reducing post harvest food losses and improving food distribution.

N.A.

(2) [104] for population planning under Sec.104(b) or health under Sec.104(c); if so, (i) extent to which activity emphasizes low-cost, integrated delivery systems for health, nutrition and family planning for the poorest people, with particular attention to the needs of mothers and young children, using paramedical and auxiliary medical personnel, clinics and health posts, commercial distribution systems and other modes of community research.

N.A.

(3) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens non-formal education, makes formal education more relevant, especially for rural families and urban

(7)

poor, or strengthens management capability of institutions enabling the poor to participate in development; and (ii) extent to which assistance provides advanced education and training of people in developing countries in such disciplines as are required for planning and implementation of public and private development activities.

(4) [106; ISDCA of 1980, Sec.304] for energy, private voluntary organizations, and selected development activities; if so, extent to which activity is: (i) (a) concerned with data collection and analysis, the training of skilled personnel, research on and development of suitable energy sources, and pilot projects to test new methods of energy production; (b) facilitative of geological and geophysical survey work to locate potential oil, natural gas, and coal reserves and to encourage exploration for potential oil, natural gas, and coal reserves; and (c) a cooperative program in energy production and conservation through research and development and use of small scale, decentralized, renewable energy sources for rural areas;

N.A.

(ii) technical cooperation and development, especially with U.S. private and voluntary or regional and international development organizations;

(iii) research into, and

N.A.

(8)

evaluation of, economic development process and techniques;

(iv) reconstruction after natural or manmade disaster;

N.A.

(v) for special development problems, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;

(vi) for programs of urban development, especially small labor intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.

c. [107] is appropriate effort placed on use of appropriate technology? (relatively smaller, cost-saving, labor using technologies that are generally most appropriate for the small farms, small businesses, and small incomes of the poor.)

N.A.

d. FAA Sec.110 (a). Will the recipient country provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the better cost-sharing requirement been waived for a "relatively least developed" country)?

N.A.

e. FAA Sec.110 (b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the recipient country "relatively least developed"?

N.A.

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(9)

f. FAA Sec.281 (b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civil education and training in skills required for effective participation in governmental processes essential to self-government.

N.A.

g. FAA Sec.122 (b). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth?

N.A.

2. Development Assistance Project Criteria (Loans Only).

a. FAA Sec.122 (b). Information and conclusion on capacity of the country to repay the loan, at a reasonable rate of interest.

N.A.

b. FAA Sec.620 (d). If assistance is for any productive enterprise which will compete with U.S. enterprises, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?

N.A.

3. Project Criteria Solely for Economic Support Fund

(10)

a. FAA Sec.531 (a). Will this assistance promote economic or political stability? To the extent possible, does it reflect the policy directions of FAA Section 102?

Yes. This project has as its prime goal to improve the efficiency of energy use and to help develop indigenous sources of energy in Pakistan which will clearly promote both economic and political stability. The project also reflects the policy directions of FAA Section 102.

b. FAA Sec.531 (c). Will assistance under this chapter be used for military, or paramilitary activities?

No.

GOVERNMENT REQUEST FOR DOLLAR ASSISTANCE

CONTRIBUTORS TO THE PAADAgency for International DevelopmentUSAID Mission to Pakistan

Backus, Russel	- Assistant Agriculture Development Officer
Bever, James A.	- Energy Advisor, Office of Energy & Environment
Blackton, John S.	- Chief, Office of Program
Lion, Donor M.	- Mission Director
Lion, Linda N.	- Chief, Office of Project Development and Monitoring
Lue Phang, Kenneth P.	- Deputy Chief, Office of Energy & Environment
Mahmood, Qaiser	- Secretary, Office of Energy & Environment
Moseley, M. Charles	- Chief, Office of Energy & Environment
Mulligan, Paul	- Economist
Politte, Jim	- Contract and Procurement Officer
Rattray, Ann	- Supervisor, Program Support Unit, Office of Energy & Environment
Samson, David	- Program Assistant, Office of Energy & Environment
Siddiqui, Masud A.	- Program Specialist, Office of Energy & Environment
Stone, Jimmie	- Deputy Mission Director
White, Bill	- Regional Affairs Officer (USAID Karachi)

AID/Washington

Ichord, Robert F.	- Chief, Energy, Forestry & Environment, ASIA/TR
Klein, Stephen	- Energy Policy Advisor, Policy Development & Program Review, PPC
Spiegelfeld, Wolfgang Von	- Chief, Near East Division, Office of Commodity Management, M/SER.

Consultants

Caron, Richard	- Energy Conservation Specialist, Arthur D. Little, Inc.
Lee, Robert	- Economist, Arthur D. Little, Inc.
Sexsmith, Fred	- Oil and Gas Specialist, Arthur D. Little, Inc.
Sullivan, James B.	- Energy Specialist (PSC)
Teagan, W. Peter	- Technology Assessment Specialist, Arthur D. Little, Inc.

Government of Pakistan Organizations

Abdullah, M.Mumtaz	- Joint Secretary, Ministry of Commerce
Ahmed, Mahmood	- Manager Technical Services, National Refinery Limited
Ahmed, S.P.	- Managing Director, Naya Daur Motor Ltd.
Akhtar, Majid,	- Joint Secretary, Ministry of Industries

Asifullah, K. H.	- Pakistan Mineral Development Corporation
Beg, H.U.	- Secretary, Ministry of Finance
Butt, Pervez Ahmed	- Karachi Electric Supply Corporation (KESC)
Chaudri, Salahuddin	- Chief Controller, Imports & Exports
Hak, Shahid K.	- Director, ENAR Petrotech
Idris, K.	- Additional Secretary, Ministry of Production
Khan, A. Majid	- Member Exec. Board, United Bank Limited
Khan, Abdul Jabbar	- President, Habib Bank Limited
Khan, Akram	- Additional Secretary, Ministry of Water & Power
Khan, M. Asad	- Minister of State, Ministry of Petroleum & Natural Resources
Khan, Rafi M.	- Manager, Small Business Fin. Corp.
Malik, A.	- Managing Director, Heavy Mechanical Complex
Massihuddin, M.	- Secretary, Ministry of Science & Technology
Mir, Sadaqat Hasan	- Senior Chief (Infrastructure), Planning Commission
Qureshi, A.D.	- Managing Director, Itchad Chemicals
Rizvi, M.H.	- Chairman, Oil & Gas Development Corporation
Saddozai, Ayub	- Member for Power, WAPDA
Sheikh, Asif Ali	- Chairman, Appropriate Technology Development Organization
Toor, K.R.	- Managing Director, Pakistan Engineering Company

Private Sector

Ahmed, S.	- Director, Khawaja Glass Ind.
Ali, S. Baber	- Director, Packages Ltd.
Brady, Thomas J.	- Resident Manager, OXY Pakistan
Cumby, Paul	- Area Manager, KCA Drilling Limited
Dawood, Ahmed	- Dawood Corporation Limited
Dawood, Razzak	- Managing Director, Descon Eng. Limited
Fikri, Z.	- Director, Fikri Associates
Haq, Manzurul	- Managing Director, KSB
Hashmi, Saeed	- Baluchistan Coal Mines
Haynes, Ernest F.	- Operations Manager, Pool Australia Inc.
Hussain, Brig. Ghulam	- Director (P&D), Fauji Foundation
Hussain, S.	- Director, Nuricon Union
Istifa, M.	- Managing Director, Mineral & Eng. Services
Jaffer, Abdul Qader	- Director, Ahmed Jaffer & Co. Ltd.
Kayani, Khaleeq	- Vice President, Bank of America
Keith, D.M.	- Burmah Oil
Khan, M. Afzal	- Chairman, Pakistan Oilfields Ltd.
Khan, S. B.	- Manager, English Biscuit Manufacturer
Kreyenberg, Detlef	- Managing Director, SIEMENS
Malik, K.	- Director, United Iron & Steel
Mufti, Tariq	- Exec. Director, ZELIN Limited
Parachi, Saifullah Khan	- Managing Director, Habibullah Mines Ltd
Sohail, H. Masood	- Pakistan Petroleum Ltd.
Soomro, Iftikhar	- Director, Karachi Electric Supply Corp.
Sumar, Farooq	- Farooq Textile Mills
Sumar, M.	- Director, Crescent Sugar
Taul, Franklin L.	- General Manager & Vice President, Union Texas Pakistan Inc.
Thaplawala, A. R.	- Plant Director, Dawood Cotton Textile

ELIGIBILITY CRITERIA/GOP ENERGY SECTOR OBJECTIVES

The primary criteria used to assess the eligibility of equipment under the ECE Program are that it serves to promote GOP objectives and policies in the energy sector articulated in its Sixth Five-Year Plan. These can be divided into general objectives, which apply to the energy sector in general, and its impact on economic development, and sectoral objectives, which quantitatively define goals in major energy use and production sectors.

A. General Objectives

The general policy objectives stated in the Plan are to:

1. Enforce efficient use of energy through education, legislative measures and price mechanisms;
2. Ensure energy use adjustments for realizing economic growth targets of the Sixth Plan in an energy-efficient manner.
3. Arrange inter-fuel adjustments with the objective of minimizing import-dependence within the Plan period.
4. Prepare the ground for growing self reliance in energy during the Seventh Plan and beyond.
5. Develop indigenous resources of energy, such as coal, renewable energy, and nuclear energy; intensify the search for yet undiscovered resources; and acquire full command of technology relating to energy substitutes.
6. Ensure coverage of the entire rural population residing in compact villages by rural electrification.
7. Evolve mechanisms for greater participation of the private sector in meeting the energy requirements of the nation.
8. Ensure proper institutionalization of longer-term energy planning, monitoring, and evaluation.
9. Rationalize energy prices.

B. Sectoral Objectives

Key sectoral objectives identified in the Plan are:

1. Energy Conservation

To implement energy conservation measures in all sectors, reducing energy consumption by 10-20% by a combination of increasing energy costs, energy audit and analysis projects, public education programs, and government mandated measures and standards.

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2. Coal Use and Mining

- (a) To lay the groundwork for greatly increased use of coal in the Seventh Plan period and beyond by constructing coal fired electric power plants, implementing coal conversion in heavy industries, and initiating the use of coal briquettes.
- (b) To increase coal mining capacity from 1.7 million tons to 5.4 million tons to serve these new applications.

3. Renewable Energy Systems

- (a) To provide the technical basis for the widespread use of renewable energy systems (photovoltaics, wind power, solar water heating, small scale hydro) in the Seventh Plan period and beyond by: field testing promising technologies and encouragement of private sector commercialization efforts.
- (b) To initiate a large scale program of tree plantations to ensure an adequate supply of firewood.

4. Power Sector

- (a) To improve the efficiency of power distribution and generation to ensure lowest possible use of fuel sources.
- (b) To maximize the use of hydropower resources consistent with economic constraints.
- (c) To electrify 20,000 additional villages thereby extending the benefits of electrification to 81% of the villages.
- (d) To encourage the private sector to set up electricity generation facilities for bulk supply to WAPDA and KESC at predetermined terms and rates.
- (e) To increase installed capacity from 4,809 MW to 8,604 MW or an increase of 3,795 MW. Over 2,200 MW of the planned increased capacity will be thermally generated, including 300 MW of coal-fired capacity at Lakhra.

5. Oil & Gas Exploration and Development

- (a) To increase the production of oil from 13,000 barrels/day to 21,000 barrels/day (a 60% increase) and natural gas from 856 MMCFD to 1204 MMCFD (a 41% increase).
- (b) To significantly increase the level of private sector participation in exploration and field development, in part, by means of improved concession terms. The specific goal for the level of private sector activity is about Rs.850 million or 40% of the total expenditures.

ILLUSTRATIVE LIST OF ELIGIBLE EQUIPMENT
AND COMMODITIES

1. ENERGY CONSERVATION AND FUEL CONVERSION EQUIPMENT

Heat Recovery Technology

Condensing heat exchangers
Metallic recuperators
Economizers
Air heaters
Heat wheels
Waste heat boilers

Instrumentation and Control Systems

Automatic actuated valves
Stack gas characterization equipment
Data acquisition equipment

Insulation Materials

High temperature refractory brick
Furnace/boiler outside walls
Steam pipe insulation
Fiberglass

Coal Handling Equipment

Conveyance/feeding
Storage
Grinding

Steam Generation Equipment

Upgrade equipment (de-aerators water treatment)
High efficiency package boilers (oil and gas)
Coal fired package boiler (stoker & fluidized bed and
gasification systems).
High efficiency and multifuel burners
Steam distribution equipment

Furnaces/waste fuel boilers

Oil/pulverized coal melting furnaces
Fuel processing equipment
High efficiency and multifuel furnaces

Motor Power Factor Correction Equipment

Upgrade equipment (capacitors and test apparatus)
High efficiency motors

Cogeneration Equipment

Packaged cogeneration systems
Waste fuel fired systems

High Efficiency Lighting Equipment

Energy Audit Equipment

Stack gas monitoring instrumentation
Thermal imaging systems
Temperature monitoring equipment
Flow meters & electric power meters
Data acquisition equipment and computers
Energy audit vehicles

2. POWER SECTOR EQUIPMENT

Distribution & Rural Electrification

Shunt capacitors
Three phase meters
Line loss monitoring equipment
Testing equipment & instruments

Generation

Replacement and upgrade parts for gas turbines
Replacement and upgrade parts for steam power units
Parts for combined cycle units
Fuel processing units
Instrumentation & control systems

3. COAL MINING EQUIPMENT

Diesel generators
Ventilation systems with associated ducts and fans
Belt and chain conveyers
Electric hoists
Groundwater control pumps
Pneumatic picks, rock drills, and loaders
Respirators and dust filters
Hard hats and electric safety lamps
Gas detectors and alarms
Hydraulic and mechanical jacks

4. RENEWABLE ENERGY EQUIPMENT

Photovoltaic Technology

Photovoltaic panels
Photovoltaic materials
Photovoltaic processing equipment
Inverters and controllers
Testing equipment

Solar Water Heaters

Solar Collectors
Absorber plates, gaskets, insulation, and transparent cover
plate materials used for collector manufacture
Special processing equipment (selective coatings, etc.)
Special pumps and controllers
Testing equipment

Wind Power Systems

Wind pump and generator systems
Blades, generators, and controls for use in wind units
Testing equipment.

Small scale Hydro

Turbine generator package
Special generators and controls
Testing equipment

Biomass systems

Low BTU gas engines
Gasifier equipment
Testing equipment
Special boilers (bio-mass fired)

5. OIL AND GAS EXPLORATION AND DEVELOPMENT EQUIPMENT

Seismic systems including ancillary vehicles
Seismic processing computer, software, and peripherals
Well logging equipment
Wireline equipment
Steel consumables (bits and casings)
Other consumables (drilling fluids, cement, chemicals, mud, etc.)
Compressor systems

DESCRIPTION OF ENERGY EQUIPMENT AND COMMODITIESA. Energy Conservation Fuel Substitution Equipment

Equipment and commodities for energy conservation and fuel substitution will play a major role in achieving the target levels of energy consumption in Pakistan's Sixth Five-Year Plan. Presently there is limited use of energy conservation/fuel substitution equipment in Pakistan. Prior to the Sixth Five-Year Plan, energy conservation was not emphasized in Pakistan, which has resulted in limited demand for this type of equipment. Energy conservation equipment manufactured in Pakistan is scarce, primarily due to this limited demand and lack of manufacturing economies of scale due to the modest size of Pakistan's industrial base. Therefore, as a practical matter, achieving the goals of the Sixth Five-Year Plan will require importing a substantial quantity of energy conservation equipment including the following categories: (i) heat recovery systems; (ii) instrumentation and control systems; (iii) insulation materials; (iv) steam generation equipment; (v) furnaces and direct fuel equipment; (vi) high efficiency motors; (vii) coal handling equipment; (viii) cogeneration equipment; and, (ix) high efficiency lighting.

1. Waste Heat Recovery Equipment

Approximately 3.2 MTOE/year of waste heat is discharged from furnaces and boilers in Pakistan's industrial sector. Heat recovery technology allows cost effective recovery and utilization of this heat. Heat exchangers are the primary component of a heat recovery system. The heat exchanger enables heat to be transferred from the reject stock gas to useful circulation streams. These heat sinks may consist of boiler makeup water, domestic water, combustion air, or ventilation air.

2. Instrumentation and Monitoring Systems

Instrumentation and control systems in this study refer to automatic actuated valves, stack gas characterization and burner control equipment, physical measurement instrumentation and data acquisition systems. Automatic actuated valves are controlled by temperature and pressure transmitters either mechanically or electrically actuated. Automatic actuation enables more accurate and uniform control enabling higher production capacities per unit of energy consumption. Stack gas characterization equipment consists of CO₂ or O₂ analyzers and temperature indicators. Continuous monitoring of the stack gas enables burner control at maximum efficiency. Advanced versions compute efficiency based on stack temperature and O₂ concentration. The systems are also available with feedback mechanisms to control combustion air changes in the burner. Physical measurement and data acquisition systems enable parameters to be measured and stored. Examples of these parameters are pressure and energy consumption and production rates. This information can lead to optimum energy use for a given plant.

3. Insulation Materials

Insulation materials consist of low thermal conductivity materials to cover the outside of pipes, ducts, vessels, furnace and boiler walls to minimize heat conduction losses. High temperature materials also need to be fire resistant. The materials are available on rolls, sheets or brick form. Materials include fiberglass, mineral wool, magnisite, zirconia, and other refractory brick.

4. Steam Generation Equipment

Steam generation equipment includes upgrade equipment such as dearators, water treatment systems, steam traps; high efficiency oil, gas or coal fired boilers; waste fuel boilers including pith, bagasse, paper waste; and high efficiency and multifuel burners.

Upgrade equipment focusses on improving boiler water quality and effective steam distribution. Existing boilers with efficiencies below 70% that are over 25-30 years should be replaced with new package boilers which can fire on multiple fuels with fuel to steam efficiencies of 82-84%.

Inefficient boilers that are too young to retire can be retrofitted with new gas and oil fired high efficiency burners. The high efficiency burners are forced draft and are made for gas, or liquid fuels. Liquid fuel burners can be pressure or steam atomized. Coal fired boilers consist of stoker, pulverized fuel, or fluidized bed. In stoker fired boilers, solid fuel burns on a grate. Pulverize fuel fired boilers use a forced draft burner to burn pulverized coal. Fluidized bed boilers burn solid fuels in a churning bed of hot sand/limestone set in motion by upward flowing air through the bed.

5. Furnaces and Direct Heating Equipment

Furnaces and direct fired heating equipment include all fuel fired operations that are not related to steam generation. The generic type of equipment for Pakistan includes electric arc furnaces, fuel fired melting operations, fuel processing equipment, high efficiency furnaces and multiple fuel furnaces. Melting furnaces are designed to heat metal scrap to 2200-3000 °F and pour the molten metal into ingots. Other furnace operations include direct heating of metal for annealing and cooling in the 600-1500°F range, indirect heat of oil in the refinery (250-600°F); and direct or indirect drying of solids (100-300°F).

6. High Efficiency Motors and Power Factor Connection Equipment

Recent developments in electric motor technology have allowed higher efficiencies to be achieved. Improvements in motor efficiency are achieved by reducing losses from friction and windage, core, static, rotor and stray load. High efficiency motors optimize the reduction in each of these losses to improve the efficiency by 5-10%.

7. Coal Handling Equipment

Coal handling equipment refers to all equipment used to transport, grind and store coal during the time between delivery and plant utilization. Pakistani coal requires special care in transport and storage. The coal can lose a significant portion of its volatile matter content and there is a constant danger of spontaneous oxidation during transportation and storage. Coal handling equipment must be blanketed in an inert environment to minimize particle breakage and attrition during transport.

8. Cogeneration Systems

Cogeneration systems produce electricity expanding hot high pressure gas either in an engine cylinder, gas or steam turbine to produce shaft power. Only about one-third of the energy consumed by the system is converted to electricity. The exhausts from these electrical production systems contain substantial amounts of heat. The system uses this reject heat to raise steam.

9. High Efficiency Lighting

Relamping with more efficient lamps can increase lighting efficiency without the need to modify lighting fixtures or ballasts. Changes in fixtures and ballasts can provide further energy savings at substantially higher capital costs. Electricity savings of 15-25 percent for high efficiency bulbs in the 40-100 watt range are common. Although the high efficiency bulb reduces operating costs, the bulb life is only about half that for the standard bulb.

B. Power Sector Equipment

The power sector is particularly important in the economic development strategy of Pakistan. About 75 % of all public sector resources are devoted to energy development. The sector is dominated by WAPDA and KESC. These organizations have both indicated the critical need to purchase equipment requiring foreign exchange to reduce line losses, upgrade the performance of existing power units, and improve their equipment rehabilitation facilities. Such equipment includes: (i) shunt capacitors; (ii) three phase meters (iii) new hot end rotor assemblies for the gas turbines; (iv) nozzle assemblies and controls specifically designed for HSD and fuel oil (existing equipment was designed for sectoral gas); (v) HSD fuel processing equipment (to remove vanadium and sodium which is harmful in the gas turbine); (vi) replacement of corroded cold end assemblies in steam plants with more acid resistant assemblies (chimney liners, air preheaters, etc.); (vii) transformers rewinding equipment; (viii) dynamometers (to measure efficiency of motors); and, (x) specialized equipment.

1. Distribution System Equipment

The distribution equipment provided by the ECE Program will be primarily that which directly or indirectly reduces energy

consumption. Specific needs identified to date include three phase meters for larger consumers and shunt capacitors for the motors of the irrigation pumps. Future requests could include improved connections and equipment to identify line losses (infrared detectors, etc).

2. Power Upgrade Equipment

There are over 200 MW of gas turbines and several small MW of steam power units using equipment manufactured in the United States. Many of these power units require upgrading and preventive maintenance for two reasons:

- The lack of foreign exchange when purchasing spare parts for normal maintenance is seriously compromising the reliability and efficiency of system operations.
- The increased use of HSD in the turbines and fuel oil in the steam plants has caused serious erosion and corrosion problems compromising system efficiency and reliability.

The equipment being considered in this category would help alleviate these problems. Failure to implement these and other measures will require further derating of these systems and substantial reductions in operating efficiency.

3. Testing and Repair Equipment

Both WAPDA and KESC operate equipment testing and repair characteristics, capacitance, and breakdown voltages, as well as more complex dynamometers for measuring efficiency and torque characteristics of motors and other electrodynamic equipment. The latter category includes rewinding equipment for transformers and special welding equipment.

C. Coal Mining Equipment

Coal mining is now done in Pakistan primarily by manual methods in underground mines. Most dislodging of the coal is by pick and shovel and coal is moved within the mines by human efforts or donkeys. Motor or hand operated hoists are typically used to lift the coal out of the shafts. This approach to mining with minimal capital investments is considered to be the most economical given the present level of coal demand and price. Introducing some level of mechanization and safety improvements will probably require greater use of equipment in categories such as: (i) diesel generators (with accessories); (ii) ventilation systems with associated ducts and fans; (iii) belt and chain conveyors to move coal through and out of the mines; (iv) electric hoists; (v) ground water control pumps; (vi) pneumatic picks, rock drills, and loaders; (vii) safety equipment such as dust filters, respirators, electric safety lamps, gas alarms, gas detectors, and hard hats; and, (viii) hydraulic and mechanical jacks for roof control and support.

The Import Policy Order of 1984 lists 76 specific categories of mining equipment which can be imported duty free to improve coal mining operations. Most equipment for mechanization and safety would fall under this list.

1. Mine Diesel Generators

An essential requirement to introducing mechanization and safety measures into the mines is a reliable source of electric power. Most of the mining areas do not have access to utility power and will need diesel generators having a capacity ranging from 50 to 500 KW to supply much needed power.

2. Ventilation Systems With Associated Parts

Increased production in most of the coal mines within acceptable safety bounds will often require installing or improving ventilation within the mines. Few mines currently have mechanical draft ventilation. The implementation of such systems in the mines requires some combination of ventilation fans and ducts or tubes to carry the air through the mine shafts. Typical fan capacities would be 20,000-40,000 CFM in the relatively modest size mines of Pakistan and duct sizes of one to four square feet would usually be required. Such equipment is standard practice in countries with well developed mining.

3. Mechanization

The core of the mechanization process would include introducing the use of pneumatic picks, rock drills, and loaders so that more coal can be mined without significantly increasing the labor force. Seams of thicknesses often found in Pakistan (two-six ft.) are commonly mined with such equipment. Equipment appropriate for use in Pakistan is readily available.

4. Safety Equipment

Present mining methods pay little attention to safety issues or the conditions in which the miners work. Increased production will require the purchasing of equipment such as respirators, electronic safety lamps, gas alarms and hard hats. The use of this equipment is standard practice in countries with well developed mining industries.

D. Renewable Energy Equipment

The renewable energy systems considered in this report include photovoltaics, solar water heating, small-scale hydro, and small wind pumps and generators. The equipment needs of these technologies fall into four categories: (1) complete units for installation in Pakistan for both the GOP demonstration programs and to support private sector initiatives; (2) parts and components for manufacture of systems in Pakistan by private sector firms; (3) specialized manufacturing equipment to allow for local manufacture of high technology components and materials; and, (4) testing and monitoring equipment for use by both

public and private sector entities in evaluating the performance characteristics of test systems.

1. Photovoltaic Power Systems

Total world production of photovoltaics power was about 13,000 kW in 1983. United States manufacturers account for about 60 percent of this total and are the technological leaders. Photovoltaics were used primarily to serve remote power needs in communications and cathodic protection. There has also been an increasing activity in demonstrating their potential for rural village power and water pumping. Pakistan has been a leader in this latter activity.

The present cost of photovoltaic panels is between \$6 and \$10 per peak watt. Due to technological improvements and increased production levels, these costs are expected to drop significantly over the next 3 years (probably to \$2-\$5 per peak watt). At these lower costs, photovoltaic power should be economically viable for a wide range of rural power needs in Pakistan.

2. Small Scale Hydro Equipment

Several forms of small scale hydro power are being developed in Pakistan.

- High Head/Low Flow (5 kW-50 kW)- These "mini-hydro" systems take advantage of the high vertical drops in small streams to generate electricity for village use.
- High Head/Medium Flow (50-200 KW) - These systems utilize the high vertical drops in medium size streams to generate power for a several villages via a mini grid system.
- Low Head/High Flow (50-200 KW) - Numerous water falls exist on the irrigation canal with low vertical drops (6-20 feet) and very high flow rates. These water falls can be utilized to generate power for regional applications.

A wide range of technologies are required for each class of applications. The mini hydro systems use simple, locally manufactured, pelton wheels. The larger systems will require more sophisticated turbines and associated controls for reliable, safe operation. The demand for equipment under the ECE Program is likely to include generators, turbine/generator units, and monitoring systems.

3. Solar Water Heating Systems

Solar water heaters use solar collectors to heat water which is then stored in insulated tanks for use on demand. They can be used to supplement energy provided by gas or oil fired heaters in homes, institutional buildings, and industry. Well designed systems can readily attain water temperatures of 200°F particularly in sunny countries such as Pakistan.

Production of solar panels in the United States is approximately 12 million square feet annually; worldwide production is in excess of 100 million square feet. Solar water heating is already an accepted commercial business in many countries such as the United States, Japan, and Cyprus.

4. Small Scale Wind Pumps and Generators

The wind resources in Pakistan are, in general, not sufficient to justify the large scale use of wind power. It is assumed that any demand for wind equipment during the duration of the ECE Program will be for wind pumps and small electric generators for use in rural areas.

Multibladed wind pumps similar to those once commonly used in the midwest United States would be well suited for pumping potable water and water for cattle in rural areas. Their widespread use and assembly in such countries as the United States, Argentina, and Australia attest to their general applicability in areas with even modest wind regimes.

Small (100-1,000 watt) wind generators are commonly available in the United States and Europe. Such units can be easily assembled for rural areas to provide basic electricity for operating radios, lights, and battery recharging functions.

E. Oil and Gas

OGDC is currently seeking a full range of equipment to support its on-going and planned drilling programs. This equipment list includes diesel electric drilling rigs, workover rigs, well logging equipment, computer software and peripherals and portable telemetric seismic systems. Other donors are providing substantial support to meet these equipment needs. Drilling rigs for OGDC are not included in this first tranche of the program. If and when an appropriate private sector drilling program is developed by the OGDC, oil rigs may be considered. ECE Program funds for the oil and gas sector will be used to support the seismic work and exploratory drilling. This equipment would allow further characterization of Pakistan's geological prospects which is a major requirement to attracting the private sector.

1. Seismic Equipment

Portable telemetric seismic equipment acoustically examines geological strata to provide data enabling the prospects of oil and gas reserves to be quantitatively estimated. A typical package consists of the seismic detector, ancillary vehicles, computer software and peripherals to signal condition and process the data.

2. Exploratory Drilling Rigs and Consumables

Exploratory drilling rigs required in the program consist of one 200 H.P. diesel electric drilling rig rated to 20,000 ft and one 1500 H.P. rig rated to 16,000 ft. Additional equipment such as spare parts for two years, steel consumables and bits, and drilling fluids would support the operation of these exploratory rigs.

DEMAND ESTIMATES FOR EQUIPMENT SUBCATEGORIESA. Energy Conservation Equipment

The Sixth Plan implies a 5 percent reduction in energy consumption from investments offering a 0.5 year payback and an additional 5 percent from investments with a 3 year payback. Achieving these goals would require the substantial implementation of energy conservation and fuel switching equipment. For example, this reduction in energy use due to conservation equipment roughly corresponds to the following market penetrations: (i) 30 percent for retrofit equipment; (ii) 10 percent for new capital equipment; (iii) 20 percent for high efficiency motors; and, (iv) 20 percent for instrumentation and controls.

In order to estimate the equipment demand implications of these penetrations, the industrial energy use was characterized by energy source for Pakistan's major industries. The energy use per unit product produced was determined from interviews and compared to that for other countries. The number of furnaces and boilers were estimated for the major industries which enabled quantification of the potential number of retrofit equipment. The split between public and private was based on the production capacity of the plants in the public and private sectors and the fact that the private sector is outpacing the public sector energy conservation projects. The demand was allocated by year based on the level of present activity and required future activity to meet the national energy targets. If the goals of the Sixth Plan are to be achieved, the above process indicated a total equipment demand in this sector of about \$250 million over the next three years. However, discussions with the industry and data provided by one of the energy audit firms (Zelin Corporation) indicated that the goals of the Sixth Plan are not likely to be achieved in practice. In order to provide more realistic estimates of equipment demand, it was assumed that only 60 percent of the energy reduction goals would be achieved during the time period.

The total resulting demand estimates for this equipment sector is shown in Table 1. The private sector demand is \$26 to \$32 million/year totalling about \$87 million for three years. The public sector demand is estimated to be \$17 to 25 million/year totalling \$60 million for the next three years. As a practical matter, U.S. manufacturers will only supply a portion of the equipment, even if a line of credit is available via the ECE Program.

The U.S. has stiff competition in all energy equipment categories with France, U.K., Germany, China, and Japan. U.S. manufacturers and Pakistani industry indicate that the foreign competition often offers vendor credits resulting in subsidized financing with concessional interest rates over long terms. Many companies in these countries are selling equipment at cost to gain foothold in Pakistan. U.S. legislation prohibits these incentives. U.S. equipment is generally more expensive than other sources although higher in quality. The quality premiums are often not recognized by Pakistani users. Strength of the U.S. dollar has

TABLE 1
ESTIMATE OF PROBABLE EXPENDITURES OF IMPORTED ENERGY CONSERVATION/FUEL
SUBSTITUTION EQUIPMENT IN THE INDUSTRIAL AND AGRO SECTORS FOR 1984-87 (\$ 000)

EQUIPMENT CATEGORY	(84-85) YEAR 1		(85-86) YEAR 2		(86-87) YEAR 3		TOTAL	
	PUBLIC	PRIVATE	PUBLIC	PRIVATE	PUBLIC	PRIVATE	PUBLIC	PRIVATE
Heat Recovery Heat Exchanger	4,300	7,500	5,000	9,000	6,500	9,500	15,800	26,000
Instrumentation and Controls	2,800	3,200	3,200	3,200	3,300	3,300	9,300	9,700
Insulation Materials	1,500	3,300	1,600	3,400	1,600	3,400	4,700	10,100
Coal Handling Equipment	--	--	--	--	2,000	1,000	2,000	1,000
Steam Generation - Burners - Upgrade - Package Boiler	5,500	7,000	5,500	8,000	5,500	9,000	16,500	24,000
Furnace - Burners - Upgrade Equip.	2,000	4,200	2,800	4,500	3,000	5,000	7,800	13,700
Motors - Power Factor Correction - High Efficiency	600	700	700	700	700	700	2,000	2,100
Cogeneration	--	--	--	--	1,500	--	1,500	--
Lighting - High Efficiency Bulbs	100	100	100	100	200	200	400	400
TOTALS	16,800	26,000	18,900	29,900	24,300	32,100	60,000	87,000

widened the price differential in the last three years. The Export Control Act controls exports by U.S. Department of Defense in selected instrumentation and computer systems. In addition, some equipment categories, such as boilers, may be prohibited for import due to their local manufacture in Pakistan.

All the above factors will tend to limit the amount and categories of equipment which are likely to be imported from U.S. manufacturers. The competitive position of U.S. energy equipment was evaluated based on the above factors (price, competition, etc.), discussions with U.S. manufacturers, and field interviews in Pakistan. In selected high technology categories such as "instrumentation and controls", U.S. manufacturers are very competitive. In other categories, such as small industrial boilers, the competitive position of U.S. manufacturers is low due to extensive local manufacturer and government import restrictions. The demand projections for U.S. energy equipment, taking into consideration the competitive environment are summarized in Table 2. The private sector demand is estimated to be \$12-20 million per year for three years totalling about \$50 million. The public sector demand for U.S. equipment is estimated to be \$7-16 million/year totalling \$36 million for the next three years.

B. Power Sector Equipment

Both WAPDA and KESC have provided preliminary lists of equipment for purchase under the ECE Program. The equipment lists are by no means complete. They do, however, indicate some of the more urgent equipment needs requiring foreign exchange and for which no other donor support is available. The upgrading of existing power plants was given special priority in the first years of the ECE Program. Otherwise, demand was assumed to be constant during the program.

Table 3 sets out the potential demand for equipment in this sector. The annual demand is estimated at about \$18 million in the first year of the program decreasing to about \$16 million for the other two years. It should be emphasized, however, that additional demands for ECE Program funds will probably emerge as the upgrading and maintenance plans of WAPDA and KESC are further developed over the next few years. For example, over \$30 million in equipment would be required to add a combined cycle capability to gas turbines having a capacity of 100 MW (combined cycle capacity = 50 MW).

C. Coal Mining Equipment

There is little experience in Pakistan on which to base demand estimates for mechanization and safety equipment in the private sector

TABLE 2
ESTIMATE OF DEMAND FOR U.S. ENERGY CONSERVATION/FUEL SUBSTITUTION
EQUIPMENT BY PAKISTAN'S INDUSTRIAL AND AGRO SECTORS (\$ 000)

EQUIPMENT CATEGORY	(84-85) YEAR 1		(85-86) YEAR 2		(86-87) YEAR 3		TOTAL	
	PUBLIC	PRIVATE	PUBLIC	PRIVATE	PUBLIC	PRIVATE	PUBLIC	PRIVATE
Heat Recovery Heat Exchanger	1,000	1,000	2,400	4,500	3,000	5,700	6,400	11,200
Instrumentation and Controls	2,000	2,800	2,800	2,800	3,200	3,200	8,000	8,800
Insulation Materials	1,300	2,600	1,400	2,600	1,400	2,600	4,100	7,800
Coal Handling Equipment	--	--	--	--	2,000	500	2,000	500
Steam Generation - Burners - Upgrade - Package boiler	2,700	3,500	2,700	4,000	2,700	4,500	8,100	12,000
Furnace - Burners - Upgrade Equip.	1,000	2,100	1,400	2,200	1,500	2,500	3,900	6,800
Motors - Power Factor Correction - High efficiency	500	700	600	700	700	700	1,800	2,100
Cogeneration	--	--	--	--	1,200	--	1,200	--
Lighting - High efficiency bulbs	70	50	70	50	180	50	320	150
TOTALS *	8,500	12,500	11,500	17,000	16,000	20,000	36,000	49,500

*Rounded off to the nearest 500.

TABLE 3

POWER SECTOR - DEMAND ESTIMATES

Value (\$ Thousands)

<u>EQUIPMENT CATEGORY</u>	<u>YEAR 1</u>	<u>YEAR 2</u>	<u>YEAR 3</u>	<u>TOTAL</u>
Distribution				
- Meters	2,500	2,500	2,500	7,500
- Capacitors	300	300	300	900
- Transformers, Switchgears*	3,000	3,000	3,000	9,000
- Minicomputer and Load Shedding*	3,000	3,000	2,000	8,000
- Sectionalizer				
- Auto Reclosures				
- Other	500	500	500	1,500
	9,300	9,300	8,300	26,900
Power Plant Upgrades				
- Gas Turbine Plants	4,000	3,000	3,000	10,000
- Steam Plants	2,000	2,000	2,000	6,000
- Hydro**	2,000	2,000	2,000	6,000
	8,000	7,000	7,000	22,000
Testing and Repair Equipment	700	700	700	2,100
TOTALS	18,000	17,000	16,000	51,000

* KESC requests.

** For special equipment to support upgrades and extension projects at Mangla, Tarbela, and Warsak: Accounts for small portion of foreign exchange gap associated with these projects.

mines. The estimates of this section are based on information contained in the coal study done in support of the Energy Planning and Development Project; USAID sponsored coal mining alternatives studies; and preliminary mechanization plan provided by one of the private sector mines. This latter source estimates that about \$1.5 million worth of pneumatic, conveyor, and safety equipment would be required to increase production from 300 to 1000 tons/day in their existing mine (2,600 acre lease in Lakhra). This estimate has been reviewed and modified somewhat for this report to include on-site diesel power and additional safety equipment.

The demand for coal depends critically on government policies relative to the Lakhra coal power plant, industrial conversions, coal briquetting, and privately owned power plants. Since these issues are only now being addressed, it was assumed that demand for coal mechanization and safety equipment would develop quite slowly over the 3 year duration of the ECE Program. The following assumptions were made:

Year 1: Miscellaneous Demand
 Year 2: 1 Mine Conversion + Miscellaneous Demand
 Year 3: 2 Mine Conversions + Miscellaneous Demand

In the above, "miscellaneous demand" refers to equipment purchases which are not associated with complete mine conversions, but are rather associated with incremental improvements of existing operations. These are estimated to be \$500,000 in the first year, increasing to \$1.5 million by the third year. This equipment could include that indicated for mine conversions and drilling equipment for defining coal reserves.

The resultant potential demand for coal mining equipment is set out in Table 4. The demand for equipment is estimated at about \$2.7 million in the second year of the program and \$4.9 million by the third year.

If the coal utilization programs accelerate over subsequent years, the potential demand for such equipment should increase greatly over that indicated in Table 4.

D. Renewable Energy Equipment

It was assumed that the ECE Program would support both private and public sector activities. The primary support for the GOP demonstration program would be during the early years of the ECE Program so that United States manufacturers would gain useful information from the field test program and equally important visibility within Pakistan. The latter benefit would facilitate the process of encouraging U.S. and Pakistani firms to cooperate in commercializing the technology for widespread use in the latter 1980's.

The DGER has a program calling for the installation of a photovoltaic village which will require \$30-40 million in photovoltaic panels over the next three years. It is assumed that the ECE Program will support this up to a limit of \$5 million for panels and monitoring equipment.

TABLE 4

COAL MINING SECTOR - EQUIPMENT DEMAND ESTIMATES

Value (\$ Thousands)

<u>EQUIPMENT TYPE FOR MINE CONVERSIONS</u>	<u>YEAR 1</u>	<u>YEAR 2</u>	<u>Year 3</u>
Ventilation	-	100	200
Pneumatic Mining Equipment	-	100	200
Conveyer Equipment	-	550	1,100
Hydraulic Shaft Support Equipment	-	450	900
Safety Equipment	-	50	100
Drilling Equipment	-	200	400
Power System	-	250	500
		-----	-----
TOTALS (Mine Conversions)		1,700	3,400
MISCELLANEOUS	500	1,000	1,500
	-----	-----	-----
TOTAL	500	2,700	4,900

The private sector will shortly be forming joint ventures with foreign firms (including U.S. companies) to assemble and manufacture photovoltaic panels. By the 2nd and 3rd years of the ECE Program, it is assumed that these firms will be importing panels, photovoltaic materials, and manufacturing equipment which could be potentially financed under the ECE Program. For purposes of this document, the demand for such equipment under the ECE Program was estimated at \$3 million over the three year period. This level of demand is consistent with one firm initiating manufacturing with U.S. purchased equipment, plus the direct import of 50-100 kW of panels and associated parts.

During the next three years, ATDO will be installing about 50 mini-hydro units and five medium size units having a total capacity of about 1000 kW. The ECE Program could provide the generators for the mini-hydro units and the turbine generator control systems for the larger units. In addition, two monitoring system packages were assumed to allow better evaluation of the systems once they are installed.

The private sector will almost certainly be increasing their participation in the production of solar water heating equipment, particularly if gas rates continue to increase as planned. It was assumed that the potential demand for imported panels, materials, and manufacturing would be about \$0.6 million during the ECE Program period. This modest demand reflects, in part, the fact that solar collectors for hot water heaters will be for the most part manufactured in Pakistan with only special materials or components imported to improve their performance.

The DGER plans to install up to 200 wind pumps and 200 small wind generators over the next three years. U.S. companies are strong contenders in both fields. The DGER program focusses on relatively small units having equipment costs which typically range from \$2,000 to \$3,000. It was assumed that the ECE Program will provide up to 50 units for selected applications.

In addition, several private sector firms are showing interest in local manufacturing of wind turbine units if the DGER program is successful. It was assumed that by the latter half of the ECE Program, this would result in limited demand for special wind foils, generators, controls, etc. having a value of about \$400,000.

Table 5 sets out the estimated equipment demand for renewable energy technologies. The demand is divided between the public and private sectors and totals about \$3 million in the first year, growing to about \$5 million by the third year. The growth in demand is due to increasing participation by the private sector as the technologies become better established and the markets expand.

It should be noted that the actual private sector demand will depend critically on the vigor with which the GOP promotes these technologies through demonstration programs, public education programs, and policies relating to their use in housing, industry, and rural electrification. The actual demand could be considerably higher if the GOP program is undertaken in a timely and effective manner.

TABLE 5
RENEWABLE EQUIPMENT
DEMAND ESTIMATES
(\$ 000)

EQUIPMENT CATEGORY	YEAR 1		YEAR 2		YEAR 3		TOTAL	
	PUBLIC	PRIVATE	PUBLIC	PRIVATE	PUBLIC	PRIVATE	PUBLIC	PRIVATE
Photovoltaics	2,000	200	1,500	1,000	1,500	2,000	5,000	3,200
Small Scale Hydro	100	-	100	-	100	-	300	-
Solar Water Heater (Components)	-	100	-	200	-	300	-	600
Wind Power	200	-	200	100	200	300	600	400
Biomass and Miscellaneous	100	100	100	200	100	300	300	600
TOTAL	2,400	400	1,900	1,500	1,900	2,900	6,200	4,800

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E. Oil and Gas Equipment

Table 6 sets out the specific equipment and training programs for which the OGDC is seeking funding. Based on discussions with them, these have been divided into high and low priority items. The former amount to \$38 million in foreign exchange over 3 years and the latter amount to \$16 million. Excluded from this list are items or projects requested by OGDC but which are almost certain to be funded by other donor agencies.

OGDC's role in the ECE program will be limited to include only those items which support its role as a vehicle to promote further private sector exploration which are set out in Table 6. The resulting list, shown in Table 7, only indicates reconnaissance seismic and exploratory drilling. The OGDC has the option of either carrying out seismic and exploratory drilling with its own donor-funded equipment or contracting for these services from specialized geophysical and drilling contractors. Therefore Table 7 is in two parts. The first assumes USAID funds the foreign exchange component of contracting for services while the second assumes USAID loans the money to the GOP for the purchase of seismic equipment and drilling rigs. In both cases, the total is \$31.5 million dollars over three years, because the potential funding level for contractor services has been set equal to the cost of purchasing seismic equipment and drilling rigs. The quantity of contractor services which the OGDC could obtain, expressed in terms of kilometers of seismic shot and number of exploratory wells drilled, has been derived from the estimated foreign exchange component of each.

TABLE 6

SUMMARY OF OGDC'S DESIRED EQUIPMENT AND TRAINING ASSISTANCE

<u>OGDC High Priority</u>	<u>Foreign Exchange</u> Million \$
- Two portable telemetric seismic systems including ancilliary vehicles, spares for one year and vendor support in Pakistan.	12.0
- Computer software and peripherals to update World Bank funded seismic processing computer at \$300,000 per year, for second and third years.	0.6
- One 200 H.P. diesel electric drilling rig rated to 20,000 ft plus two years spares	10.0
- One 1500 H.P. diesel electric drilling rig rated to 16,000 ft plus two years spares	9.0
- Two workover rigs plus two years spares	<u>6.0</u>
Sub-total	37.6
<u>OGDC Low Priority</u>	
- Wireline equipment to support two drilling programs	2.0
- Well logging equipment to support two drilling programs	3.0
- Training program for production department	0.5
- Training program for corporate planning department including two personal computers	0.2
- Materials bank for six wells and inventory control system	<u>10.4</u>
Sub-total	<u>16.1</u>
 TOTAL High and Low Priorities	 53.7

Source: Equipment =OGDC ;Prices =ADL estimates and OGDC.

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TABLE 7

POTENTIAL USAID FUNDING FOR OGDC EXPLORATORY WORK

<u>Contractor Provided Services</u>	<u>Priority</u>		<u>Foreign</u>
	<u>OGDC</u>	<u>USAID</u>	<u>Exchange Component</u> \$ Million
- 4,500 km of reconnaissance seismic over 3 years	High	High	12.0
- Seven exploratory wells	High	Medium	<u>19.0</u>
Sub-total			31.0
- Computer software and peripherals to update World Bank funded seismic processing computer at \$300,000 per year, for second and third years.	High	High	<u>0.6</u>
Total			31.6
<u>Equipment Provided to OGDC</u>			
- Two portable telemetric seismic systems including ancilliary vehicles, spares for one year and vendor support.	High	Medium	12.0
- One 200 H.P. diesel electric drilling rig rated to 20,000 ft plus two years spares	High	Low	10.0
- One 1500 H.P. diesel electric drilling rig rated to 16,000 ft plus two years spares			
- Computer software and peripherals to update World Bank funded seismic processing computer at \$300,000 per year, for second and third years.	High	High	<u>0.6</u>
TOTAL			<u>31.6</u>

Source : ADL estimates