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**Folder ID:** 1540569

**Series:** Sector and Operational energy and industry unit chronological files

**Dates:** 12/27/1982 - 06/30/1983

**Subfonds:** Masood Ahmed files

**Fonds:** Records of Individual Staff Members

**ISAD Reference Code:** WB IBRD/IDA STAFF-19-02

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THE WORLD BANK

Washington, D.C.

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The World Bank

1818 H Street NW

Washington DC 20433

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**PUBLIC DISCLOSURE AUTHORIZED**

MR. MASOOD AHMED

CHRONOLOGICAL

1983  
January to June

  
**1540569**  
R1998-232 Other # 9 Box # 145370B  
Masood Ahmed - Chronological File - January to June 1983

**DECLASSIFIED  
WITH RESTRICTIONS  
WBG Archives**



Chron

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1 OF 1

EXTENSION

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TO:

MR. NJIE, PERMANENT SECRETARY, MINISTRY OF  
ECONOMIC PLANNING, BANJUL, GAMBIA. COPY TO MR. DEMEKSA, UNDP. WE  
WOULD APPRECIATE YOUR COMMENTS ON THE DRAFT ENERGY REPORT PRESENTED  
TO YOU BY MR. MASOOD AHMED DURING HIS VISIT TO BANJUL IN MAY 1983.  
AS DISCUSSED WITH YOU THEN, WE PROPOSE FOLLOW-UP ENERGY ASSESSMENT  
MISSION TO (AAA) UPDATE THE FACTS, ENERGY BALANCES AND PROJECTS IN  
THE DRAFT REPORT. (BBB) EVALUATE OPTIONS FOR IMPROVING THE EFFI-  
CIENCY OF ENERGY USE IN THE INDUSTRIAL, COMMERCIAL AND RESIDENTIAL  
SECTOR OF THE ECONOMY. (CCC) ESTABLISH THE INSTITUTIONAL FRAMEWORK  
FOR COORDINATING AND MANAGING ENERGY SECTOR ACTIVITIES. (DDD)  
IDENTIFY TECHNICAL AND FINANCIAL ASSISTANCE REQUIREMENTS FOR AN  
ENERGY PLANNING UNIT AND AN ENERGY SECTOR PLAN OF ACTION. IF YOU  
AGREE WITH ABOVE OBJECTIVES FOR THE MISSION WE WILL SEND FURTHER  
DETAILS ON TIMING AND COMPOSITION OF THE ASSESSMENT MISSION WHICH  
WE PROPOSE FOR MID-JULY. REGARDS, HAROLD WACKMAN, ACTING CHIEF,  
ENERGY ASSESSMENTS DIVISION, ENERGY DEPARTMENT, WORLD BANK.

END  
OF  
TEXT

NOT TO BE TRANSMITTED

CLASS OF SERVICE: <b>Telex</b>	TELEX NO.: <b>965-44530</b>	DATE: <b>6/30/83</b>
SUBJECT: <b>EA REPORT ON GAMBIA</b>	DRAFTED BY: <b>Mahmed:cra</b>	AUTHORIZED BY (Name and Signature): <i>Masood Ahmed</i>
CLEARANCES AND COPY DISTRIBUTION: <b>CC &amp; CLEARED WITH: Ms. K. Larrecq</b> <b>CC: Ms. Thiam, Iskander</b>		
<b>ENERGY</b>		
SECTION BELOW FOR USE OF CABLE SECTION CHECKED FOR DISPATCH		



June 30, 1983

Mr. A. M. Sutton  
Head, Computer Modelling  
Atkins Planning  
Woodcote Grove Ashley Road  
Epsom Surrey KT18 5BW  
England

Dear Mr. Sutton:

Thank you for your letter of June 28, 1983 and the 'Information Package' comprising:

1. "ATPLAN in Energy"
2. Some print-outs showing the construction of a model and the results obtained.
3. ATPLAN application descriptions
4. ATPLAN sales brochure
5. ATPLAN price list

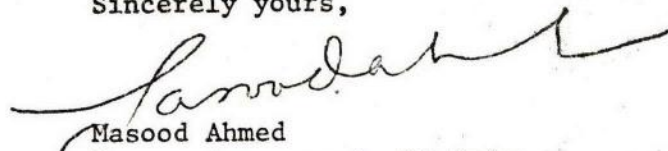
I have gone through the material and I understand that you are in the process of developing software for the desktop computers.

As I indicated to you on the telephone, our primary interest is in acquiring software for the HP-87 Personal Computer that we have recently purchased and I believe that it would not be very useful to have your current software demonstrated.

I would, however, appreciate if you would kindly keep me posted about the development of Personal Computer Software, for we would be interested in such a capability.

Thank you once again for your cooperation.

Sincerely yours,

  
Masood Ahmed  
Energy Assessments Division  
Energy Department



June 29, 1983

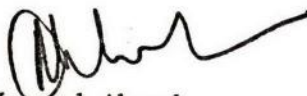
Mr. Paul Williams  
Waterwide Burners  
P.O. Box 4  
Haumonna  
Hawkes Bay  
New Zealand

Dear Mr. Williams:

I am interested in obtaining some information on the biomass burning furnace developed by your company. I was told by Dr. David Craig of the Department of Minerals and Energy of the Government of Papua New Guinea that some of these furnaces are operating successfully in that country.

As these furnaces have obvious relevance to the work of the Bank in other countries, any information you can provide us would be most helpful; particularly, I would be grateful if you could supply a list of existing users and an estimate of the cost of installing and operating these furnaces. I look forward to hearing from you.

Sincerely yours,




Masood Ahmed  
Energy Assessments Division  
Energy Department

# OFFICE MEMORANDUM

TO: Distribution

DATE: June 29, 1983

FROM: Masood Ahmed, EGYEA 

SUBJECT: Energy Sector Management Program Activity Initiation Report  
Malawi: Tobacco Industry Energy Efficiency Improvements

1. Attached please find the terms of reference for the above study which is being funded under the Energy Sector Management Program. This work had been identified as having high priority in the energy assessment report completed in August 1982. Subsequent discussions with the Government have confirmed that they would like to proceed on this with Bank assistance as quickly as possible.
2. The objective and scope of work are described in the attached terms of reference. The work is being jointly supervised by staff of EGYEA, EAPSA and the Programs Division.
3. The study is expected to cost \$40,000.


Distribution:

Messrs. Rovani, Rao, Sheehan, Sadove, Bourcier, Iskander, Dosik, Fish, Hughart, Bharier, Wackman (EGY); Reese, Hall (EAI); Bronfman, Erkmen, Senner (EAP); Wagner (EAPSA)



## OFFICE MEMORANDUM

TO: Messrs. Lambert, Lethbridge-Stocks (Consultants) DATE: June 8, 1983

FROM: Masood Ahmed, EGYEA 

SUBJECT: Evaluation of Alternative Technical Packages for Improving the Efficiency of Wood Use in the Tobacco Industry--Terms of Reference

1. The principal objectives of the study are as follows:
  - (i) to prepare a comprehensive inventory of the various technical packages that could be used to improve the efficiency of energy use in the tobacco industry in Malawi;
  - (ii) to compare these alternatives in terms of investment cost, likely savings, lead time for implementation, ease of administration, degree of commercial readiness, etc.;
  - (iii) to recommend a costed and scheduled program of action, based on the above; this should include the pre-investment and investment work required to achieve these savings and any experimental or pilot projects needed to further evaluate specific technical options which are not fully tested yet;
  - (iv) to evaluate training and extension measures necessary to ensure the acceptance and successful implementation of the program in the tobacco sector;
  - (v) to suggest the agencies which would be responsible for the coordination and implementation of the project investments, manpower and extension services requirements both in the smallholder and estate sub-sectors.

Background

2. In carrying out this study, the following background information is useful.

3. Tobacco curing accounts for an estimated 40% of Malawi's fuelwood consumption. There is now considerable evidence to indicate that the volume of wood consumed by the tobacco industry could be dramatically reduced through measures to improve the efficiency with which wood is burned in this industry. While energy savings are possible in both flue-cured and fire-cured tobacco production, the immediate potential appears to lie in the former area where considerable preparatory work has been done in the country and where improved practices in neighboring countries can be most easily applied. Estimates of the potential savings that could be realized in wood consumed by flue-cured tobacco curing range from 30 to 50% through low cost investments and better housekeeping measures alone. Potential savings in the fire-cured tobacco production have not been thoroughly explored. The



fuelwood shortage and by the fact that programs to improve the efficiency of wood use in the household sector (the other major wood user) are likely to be more difficult and time consuming to implement.

4. Considerable work has already been done in Malawi to develop various technical packages for improving the energy efficiency of tobacco barns. In 1977-78, the Tropical Products Institute carried out a series of tests in the Kasungu Flue-Cured Tobacco Estates which confirmed that wood consumption could be reduced to 0.02-0.03 m<sup>3</sup> for kg of cured tobacco. (In comparison the least efficient barns consume as much as 0.13 m<sup>3</sup> per kg.) More recently, the Tobacco Research Authority (TRA) has carried out tests using low cost improvements, such as better grates and chimneys, which also show similar results. The TRA is also working on improved flue designs to achieve better heat transfer which could result in further savings. The Government has also received a proposal for the use of solar crop drying in tobacco barns and there are likely to be other technical options which can be used for this purpose.

5. However, before a large scale program of energy efficiency improvements can be developed, it is necessary to compile and evaluate these various technical options whose costs, benefits and state of readiness vary widely. It is likely that a phased program will be most appropriate. Initially, the emphasis could be on low cost measures which have already been tested extensively and whose primary objective would be to bring the efficiency of the below average barns to the level of the more efficient ones. More fundamental design and technology changes could be implemented in a second phase particularly if there are still some technical or economic uncertainties associated with some of them. In that event, any further work needed to resolve these uncertainties should be carried out during the first phase in parallel with the implementation of the tested low cost measures. Preparing a detailed, costed program of action covering these steps is the principal purpose of this assignment.

#### Consultants Assignment

6. Since the assignment requires expertise in (a) tobacco curing technology and in (b) technology application and extension we send two consultant together to Malawi to ensure that both aspects are properly covered. The consultants will be assigned to the Planning Divisions of the Ministry of Agriculture and their contact person will be Mr. Katchoka.

7. Mr. Lambert will visit Malawi for approximately three weeks beginning June 15 to carry out the field work for the above assignment. Prior to his departure he will spend one day at the World Bank reviewing the background material on this subject and for discussions with the relevant Bank staff. And on his way to Malawi he will stop over on June 13 in Harare, Zimbabwe for 3 days to familiarize himself with the state of art in tobacco curing in Zimbabwe. Mr. Lambert will in principle focus his activities on technology aspects of tobacco flue curing and he will:



- (i) prepare a comprehensive inventory of the various technical packages that could be used to improve the efficiency of energy use in the tobacco industry in Malawi;
  - (ii) compare these alternatives in terms of investment cost, likely savings, lead time for implementation, ease of administration, degree of commercial readiness, etc.;
  - (iii) in close cooperations with Mr. Lethbridge-Stocks recommend an appropriate technical package with a costed and scheduled program of its introduction. This should include the pre-investment and investment work required to achieve these savings, the associated manpower and institutional requirements and any experimental or pilot projects needed to further evaluate specific technical options which are not fully tested yet.
8. Mr. Lethbridge-Stocks will travel to Malawi for about two weeks beginning June 25 to join Mr. Lambert. Both will work together in close cooperation.
9. Mr. Lethbridge-Stocks will concentrate on the application of technical packages proposed by Mr. Lambert and explore the capacity of the existing extension service to introduce new technologies.
10. In particular, Mr. Lethbridge-Stocks will:
- (i) concentrate on the applicability of technical packages proposed by Mr. Lambert and explore the capacity of the extension service to introduce new technologies;
  - (ii) identify training and extension measures necessary to assure acceptance and successful application of new technologies;
  - (iii) identify necessary policy measures which should be considered by the Government to reduce wood consumption (higher stumpage rates or fuelwood or adequate wood pricing);
  - (iv) assist Mr. Lambert in drafting the report which should reflect your findings and recommendations before you leave Malawi on July 9.

#### Reports

11. At the end of field work, about July 9, a draft report should be prepared by both Messrs. Lambert and Lethbridge-Stocks incorporating their preliminary findings. These should be discussed with the Bank staff (Mr. Wagner) who will join the mission on July 6, and participate in the wrap-up meetings with officials from Government and Tobacco Research Authority. Upon return from Malawi, Mr. Lambert will prepare a

draft report on the findings by July 20, and a final report incorporating further Bank staff comments by August 1, 1983.

cc: Messrs. Reese, Hall (EA1); Erkmen, Senner, Bronfman, Wagner (EAP); Rao, Hughart, Bharier (EGY)




Chon

## OFFICE MEMORANDUM

TO: Distribution

DATE: June 21, 1983

FROM: Masood Ahmed,  EGYEASUBJECT: Burundi - Energy Sector Management Program: Assistance in  
Petroleum Development: Activity Initiation Report

1. The attached documents provide a brief description of the above activity which we propose to finance through the Energy Sector Management Program (ESMP). A preliminary cost of estimate and draft terms of reference for the three consultants to be financed are also attached. While the third set of terms of reference spell out the tasks of the specialist dealing with cross-border unitization, it is likely that the exact content of any technical assistance for this purpose will be modified prior to implementation, for example by having the negotiations consultant also address the unitization problem. The cost of the proposed activity would be modified accordingly. In addition, since the initial discussions with the Government, it appears that the services of the contract negotiations specialist may be obtained through the UN-TCD. If this is confirmed, then the scope of the proposed activity would be reduced accordingly.

2. Please send your comments on these documents to Mr. N. Fostvedt (D-540, Ext. 72830) or to myself (D-449, Ext. 74545).

Distribution:

Messrs. Gusten, Bronfman, Erkmen (EAP); de Capitani (EA2); Rovani, Rao, Bourcier, Sheehan, Sadove, Fish, Hughart, Iskander, Bauer Fostvedt, Chamot, Schweighauser (EGY)

Mmes. Monceaux, Freire (EA2)





(b) The airmag reinterpretation, which should be done quickly to provide up-to-date information to the Government.

4. The attached budget shows that US\$50,000 will be required through September, most or all of which will be committed over the next two months. It is possible that a somewhat larger amount than now allocated could turn out to be required for consultancy services. Accordingly, we would only commit the funds for the airmag reinterpretation once the exact requirements for consultancy services are known.

5. We would appreciate your early agreement to utilize US\$50,000 out of the UNDP/Bank Energy Management Program for petroleum technical assistance to the Government of Burundi, as discussed above.

Attachment

Cleared with and cc: Ms. Monceaux (EA2); Mr. Ahmed (EGYEA)

cc: Mr. Chamot (EGYD2)

NFostvedt:tb

B U D G E TAvril - décembre 83

(US\$)

a) <u>Conseillers</u>	
3 hommes-mois - 15,000 \$	45,000
Voyages et déplacements	<u>20,000</u>
sous total	65,000
b) <u>Travaux géophysiques</u>	
Gravité	15,000
Reinterprétation de l'airmag	<u>20,000</u>
sous total	35,000
c) <u>Travaux géochimique</u>	10,000
sous total	110,000
Imprévu	<u>10,000</u>
Total	120,000
<u>Budget d'urgence (avril - septembre 83)</u> <sup>1/</sup>	
- 5 semaines de conseiller	18,000
- 3 voyages	12,000
- airmag interpretation	16,000
- imprévu	<u>4,000</u>
	<u>50,000</u>

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<sup>1/</sup> Most of these funds will probably be spent in the period April-June.



BURUNDI  
CONSEILLER TECHNIQUE EN EXPLORATION PETROLIERE  
TERMS DE REFERENCE

Introduction

1. Le Gouvernement du Burundi, a obtenu de l'IDA le financement certaines depenses relatives a l'acceleration de l'exploration petroliere, plus particulierement les frais d'emploi d'un conseiller explorationiste.

Description des Taches

2. L'explorationiste doit fournir des conseils en toute impartialite et en toute objectivite sur tous les problemes relatifs a l'exploration en Burundi.
3. Il se mettra au courant de toute information publiee ou disponible dans les bureaux du Service de Geologie a Bujumbura, et fera part de ses commentaires, observations et recommandations.
4. Il aidera de ses conseils le Gouvernement du Burundi durant les negociations avec les compagnies petrolieres desireuses d'obtenir des permis d'exploration sur le territoire national.
5. Le conseiller cooperera egalement avec le conseiller juridique et autres parties defendant les positions du Burundi.

Calendrier et termes

6. Le conseiller sur demande du Ministre se rendra au Burundi ou a tout autre endroute designe, pour effectuer ses taches.
7. La duree de ce contract est pour 8 mois a raison de periodes dont le

total ne depassera pas deux mois.

Secret

8. Le conseiller s'engage a respecter le caractere confidentiel et secret des taches decrites.



BURUNDI  
CONSEILLER EN NEGOTIATIONS  
TERMES DE REFERENCE

Introduction

1. Le Gouvernement du Burundi, a obtenu de l'IDA financement de certaines depenses relatives a l'acceleration de l'exploration l'exploration petroliere, plus particulierement les frais d'emploi d'un conseiller en negotiations.

Description des Taches

2. Le conseiller doit fournir des conseils en toute impartialite et en toute objectivite sur tous les problemes relatifs aux discussions concernant une prise de droits d'exploration petroliere au Burundi.
3. Il se mettra au courant de toute information publiee ou disponible dans les bureaux du Gouvernement a Bujumbura, concernant l'etablissement de contracts ainsi que les reglements qui regissent les relations avec les etats voisins.
4. Le conseiller fera part de ses commentaires, observations et recommandations durant la preparation aux negotiations et les negociations avec les compagnies interessees.
5. Le conseiller cooperera egalement avec le conseiller technique et les autres parties defendant les positions du Burundi.

Calendrier et termes

6. Le conseiller sur demande du Ministre se rendra au Burundi ou a tout autre endroit designe, pour effectuer ses taches.
7. La duree de ce contract est pour 8 mois a raison de periodes dont le total ne depassera pas deux mois.

Secret

8. Le conseiller s'engage a respecter le caractere confidentiel et secret des taches decrites.



BURUNDI

Cross-Border Unitization

Initial Terms of Reference 1/

1. The Government of Burundi has obtained from the UNDP/World Bank energy management program financing of technical assistance for the acceleration of petroleum exploration in the country. In this regard, the Government has indicated its interest in some assistance concerning the question of unitization of possible hydrocarbon structures that might straddle Burundi's borders, in particular that with Tanzania.
2. In view of the possibility of such cross-border structures, the Government would require assistance in one or more of the following areas:
  - (a) Advice on the general approach to and problems with unitization agreements, in particular concerning cross-border cases based on experiences in other countries including the North Sea countries;
  - (b) Advice on the specific problems that might arise in this case, including advice and assistance on any exploration agreements that Burundi might negotiate with oil companies, and also including general advice in connection with any initial discussions that the Government might initiate with neighboring countries on the unitization issues.
3. The adviser to be selected would visit Burundi on the request of the Minister to carry out his tasks.
4. The duration of the contract will be five months, in which the total time worked would not surpass one month.
5. The adviser would respect in all aspects the confidential nature of his task and the information he would be receiving.
6. On the completion of his task, the adviser would prepare a concise report to the Government with a copy to the World Bank.

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1/ While these terms of reference spell out the issues to be addressed by the unitization specialist, it is likely that the exact content of any technical assistance for this purpose will be modified prior to implementation.

\*NOTE, RESPONSE TO THIS ATTACHED!

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TO MR. BENJAMIN, INTBAFRAD, DAKAR, SENEGAL.

RE YOUR TELEX OF JUNE 10, COMMENTS FROM DISCUSSION WITH GOVERNMENT  
ARE BEING INCORPORATED INTO FINAL VERSION OF ENERGY SECTOR REPORT.  
REPORT SHOULD ARRIVE IN SENEGAL WEEK OF JULY 18. REGARDS,  
MASOOD AHMED, ENERGY DEPARTMENT, INTBAFRAD.

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TEXT

NOT TO BE TRANSMITTED

CLASS OF SERVICE: **TELEX**

TELEX NO.: **962-3149**

DATE: **6.14.83**

SUBJECT  
**Senegal: Energy Assessment**

DRAFTED BY  
**NKing:jl**

CLEARANCES AND COPY DISTRIBUTION:

**cc: Mr. Palein (WA2)**

AUTHORIZED BY (Name and Signature)

**Harold Wackman**

DEPARTMENT

**Acting Chief, EGYEA, Energy Department**

SECTION BELOW FOR USE OF CABLE SECTION  
CHECKED FOR REPLY



Met

Distribution

Mr. Bharier

Mr. Palein

FROM DAKAR, SENEGAL

JUNE 10, 1983

210

FOR MAHSOOD AHMED CCG: PALEIN

REF. ENERGY SECTOR REPORT. NATIONAL ENERGY COMMISSION  
PLANS TO MEET MID-JULY. WOULD APPRECIATE KNOWING WHETHER ENERGY  
REPORT WILL BE SENT TO GOVERNMENT IN TIME FOR COMMISSION TO  
USE IT. REGARDS. BENJAMIN.

## OFFICE MEMORANDUM

TO: Mr. Nikhil Desai  
FROM: Masood Ahmed, EGYEA

DATE: June 13, 1983

SUBJECT: Terms of Reference for Researcher Appointment

1. The principle objective of your assignment which will last from May 24 to August 31, 1983, is to prepare an inventory of the various energy sector pre-feasibility and feasibility studies carried out in the Bank since 1977 and to compile all the terms of reference which have been used for each type of study carried out. On this basis you will draft, wherever possible, model terms of reference which could be used as a reference document for future studies in the various categories. You should also establish the average and range of costs (dollars and man months) and implementation time for each category of study and identify any special factors which affect these variables. Finally, you will prepare an inventory of the consultant firms/individuals that have been short-listed to carry out each type of study, either for Bank projects or for direct Bank financed work.

2. You will begin your work by examining studies carried out in the Electric Power Sector. A preliminary list of these studies is attached as Annex I. You should add other types of studies to this list as you identify them. In carrying out this work you will liaise closely with Mr. E. Moore of the Power Advisory Staff. You will also need to follow-up on individual studies with Power Projects Staff in each region and on the power economics studies with the Economic Advisory Staff in the Department.

3. I expect the bulk of the collection and compilation work in the Power Sector to be completed by July 1st. At that stage we will determine how much additional time will be needed to prepare the standard terms of reference for each type of electric power study. Based on that analysis we will determine the extent to which you will carry out similar work in the other energy sub-sectors during the remainder of your assignment.

4. You will report to me during this assignment.

Attachment

cc and cleared with Messrs. Bharier, Moore  
cc: Messrs. Rao, Sheehan, Fish, Hughart, Albouy, Jechoutek, Wackman, Bates, Schmedtje



PRELIMINARY LIST OF POWER SECTOR STUDIES

- (i) Hydro Resource Inventory and Ranking
- (ii) Thermal Power Station Feasibility (separately for oil, coal, gas, lignite)
- (iii) Power System Planning Methodology
- (iv) Least Cost Power System Development
- (v) Transmission and Distribution Expansion
- (vi) System Control, Efficiency and Reliability
- (vii) Loss Reduction
- (viii) Load Forecasting
- (ix) LRMC Calculation and Tariffs
- (x) Utility Financial Structure and Accounting
- (xi) Organization and Management

## OFFICE MEMORANDUM

TO: Messrs. Lambert, Lethbridge-Stocks (Consultants) DATE: June 8, 1983

FROM: Masood Ahmed, EGYEA *MA*

SUBJECT: Evaluation of Alternative Technical Packages for Improving the Efficiency of Wood Use in the Tobacco Industry--Terms of Reference

1. The principal objectives of the study are as follows:
  - (i) to prepare a comprehensive inventory of the various technical packages that could be used to improve the efficiency of energy use in the tobacco industry in Malawi;
  - (ii) to compare these alternatives in terms of investment cost, likely savings, lead time for implementation, ease of administration, degree of commercial readiness, etc.;
  - (iii) to recommend a costed and scheduled program of action, based on the above; this should include the pre-investment and investment work required to achieve these savings and any experimental or pilot projects needed to further evaluate specific technical options which are not fully tested yet;
  - (iv) to evaluate training and extension measures necessary to ensure the acceptance and successful implementation of the program in the tobacco sector;
  - (v) to suggest the agencies which would be responsible for the coordination and implementation of the project investments, manpower and extension services requirements both in the smallholder and estate sub-sectors.

Background

2. In carrying out this study, the following background information is useful.

3. Tobacco curing accounts for an estimated 40% of Malawi's fuelwood consumption. There is now considerable evidence to indicate that the volume of wood consumed by the tobacco industry could be dramatically reduced through measures to improve the efficiency with which wood is burned in this industry. While energy savings are possible in both flue-cured and fire-cured tobacco production, the immediate potential appears to lie in the former area where considerable preparatory work has been done in the country and where improved practices in neighboring countries can be most easily applied. Estimates of the potential savings that could be realized in wood consumed by flue-cured tobacco curing range from 30 to 50% through low cost investments and better housekeeping measures alone. Potential savings in the fire-cured tobacco production have not been thoroughly explored. The



fuelwood shortage and by the fact that programs to improve the efficiency of wood use in the household sector (the other major wood user) are likely to be more difficult and time consuming to implement.

4. Considerable work has already been done in Malawi to develop various technical packages for improving the energy efficiency of tobacco barns. In 1977-78, the Tropical Products Institute carried out a series of tests in the Kasungu Flue-Cured Tobacco Estates which confirmed that wood consumption could be reduced to 0.02-0.03 m<sup>3</sup> for kg of cured tobacco. (In comparison the least efficient barns consume as much as 0.13 m<sup>3</sup> per kg.) More recently, the Tobacco Research Authority (TRA) has carried out tests using low cost improvements, such as better grates and chimneys, which also show similar results. The TRA is also working on improved flue designs to achieve better heat transfer which could result in further savings. The Government has also received a proposal for the use of solar crop drying in tobacco barns and there are likely to be other technical options which can be used for this purpose.

5. However, before a large scale program of energy efficiency improvements can be developed, it is necessary to compile and evaluate these various technical options whose costs, benefits and state of readiness vary widely. It is likely that a phased program will be most appropriate. Initially, the emphasis could be on low cost measures which have already been tested extensively and whose primary objective would be to bring the efficiency of the below average barns to the level of the more efficient ones. More fundamental design and technology changes could be implemented in a second phase particularly if there are still some technical or economic uncertainties associated with some of them. In that event, any further work needed to resolve these uncertainties should be carried out during the first phase in parallel with the implementation of the tested low cost measures. Preparing a detailed, costed program of action covering these steps is the principal purpose of this assignment.

#### Consultants Assignment

6. Since the assignment requires expertise in (a) tobacco curing technology and in (b) technology application and extension we send two consultant together to Malawi to ensure that both aspects are properly covered. The consultants will be assigned to the Planning Divisions of the Ministry of Agriculture and their contact person will be Mr. Katchoka.

7. Mr. Lambert will visit Malawi for approximately three weeks beginning June 15 to carry out the field work for the above assignment. Prior to his departure he will spend one day at the World Bank reviewing the background material on this subject and for discussions with the relevant Bank staff. And on his way to Malawi he will stop over on June 13 in Harare, Zimbabwe for 3 days to familiarize himself with the state of art in tobacco curing in Zimbabwe. Mr. Lambert will in principle focus his activities on technology aspects of tobacco flue curing and he will:



- (i) prepare a comprehensive inventory of the various technical packages that could be used to improve the efficiency of energy use in the tobacco industry in Malawi;
- (ii) compare these alternatives in terms of investment cost, likely savings, lead time for implementation, ease of administration, degree of commercial readiness, etc.;
- (iii) in close cooperations with Mr. Lethbridge-Stocks recommend an appropriate technical package with a costed and scheduled program of its introduction. This should include the pre-investment and investment work required to achieve these savings, the associated manpower and institutional requirements and any experimental or pilot projects needed to further evaluate specific technical options which are not fully tested yet.

8. Mr. Lethbridge-Stocks will travel to Malawi for about two weeks beginning June 25 to join Mr. Lambert. Both will work together in close cooperation.

9. Mr. Lethbridge-Stocks will concentrate on the application of technical packages proposed by Mr. Lambert and explore the capacity of the existing extension service to introduce new technologies.

10. In particular, Mr. Lethbridge-Stocks will:

- (i) concentrate on the applicability of technical packages proposed by Mr. Lambert and explore the capacity of the extension service to introduce new technologies;
- (ii) identify training and extension measures necessary to assure acceptance and successful application of new technologies;
- (iii) identify necessary policy measures which should be considered by the Government to reduce wood consumption (higher stumpage rates or fuelwood or adequate wood pricing);
- (iv) assist Mr. Lambert in drafting the report which should reflect your findings and recommendations before you leave Malawi on July 9.

#### Reports

11. At the end of field work, about July 9, a draft report should be prepared by both Messrs. Lambert and Lethbridge-Stocks incorporating their preliminary findings. These should be discussed with the Bank staff (Mr. Wagner) who will join the mission on July 6, and participate in the wrap-up meetings with officials from Government and Tobacco Research Authority. Upon return from Malawi, Mr. Lambert will prepare a

draft report on the findings by July 20, and a final report incorporating further Bank staff comments by August 1, 1983.

cc: Messrs. Reese, Hall (EAl); Erkmen, Senner, Bronfman, Wagner (EAP);  
Rao, Hughart, Bharier (EGY)



## OFFICE MEMORANDUM

TO: Mr. Jean-Luc Follain, EGYIC

DATE: June 6, 1983

FROM: *hathy*  
Masood Ahmed, EGYEASUBJECT: Documents Sent to EGYIC

On April 20, 1982 I sent to EGYIC for storage a number of documents relating to the Malawi Energy Assessment. Recently I asked my secretary to retrieve some of these documents which I need for the Follow-up Program to the Energy Assessment in Malawi. I was amazed to learn that you have taken the initiative of destroying all of these documents without consulting me as to their continued usefulness. I would be grateful if you could confirm whether this is the case so that I can take further action in this matter.

cc: Mr. Julian Bharier (EGYEA)

WORLD BANK / INTERNATIONAL FINANCE CORPORATION

April 20, 1983

Janet:

Would you please retrieve from the Information Center files the following documents:

For Malawi:

1. British Mining Consultants Limited: "Energy Assessment Mission Coal Consultancy Section"
2. World Bank/IFC Investment Committee memorandum on "Field Appraisal Request" April 1, 1980.
3. MALAWI "Wood Energy Project" Report No. 52/79 MLW 4, 30 November 1979 CONFIDENTIAL
4. Report and Recommendation of the President of the IBRD to the EDS on a Proposed Technical Assistance Loan to the Republic of Malawi, June 4, 1981. Report No. P-3025a-MAI
5. Graph - Malawi - Energy Imports as a Percentage of.  
- Energy Import Costs

For Kenya

1. Kenya Fisheries Project - Staff Appraisal Report, May 14, 1980. Report No. 2864-KE.
2. FIDIMI Interim Report, April 1981: "Energy Consultancy for the Ministry of Energy of Kenya"
3. Petroleum Products - Demand and Forecasts -  
Table 1: Consumption of Petroleum Products within Kenya
4. Paper entitled "An Investigation into some Ways of Using Fuel to Better Advantage in Transport".
5. Black Book - Petroleum Products data 1981.

When you have done so, please give me a call. If you have any problem finding any of these don't hesitate to call. Thank you.

*Christine, EG4EA x74544.*

June 4, 1983

Items For Follow-up In My Absence

ESMP (Read in conjunction with summary table of status report)

1. Burundi Petroleum Supply Management. Noel is in contact with the consultants (Breux, Orsatelli) to firm up whether/when they can go. If confirmed, Raquel will need to organize travel, etc. Mission should be early July but consultant will visit Washington for 2-3 days first so we can check him out and he can familiarize himself with background material. Need to send telex for final Government approval of consultant/mission timing once these are confirmed. Noel has detailed instructions.
2. Burundi Negotiations with oil companies. I have drafted an Activity Initiation Report (in the file on this). We need to get TOR's for third consultant from Fostvedt before it can be issued. We should not authorize any disbursements until AIR has been issued. Fostvedt needs a push.
3. Burundi. Country Status Report. Noel is preparing draft for mission in early July to overlap with Petroleum Supply Consultant visit.
4. Kenya Country Status Report. Upon Ken's return, we should arrange for minor desensitizing (Anderson has suggestions) before sending to Government for information and clearance for wider distribution. Yves would like a regional meeting on this to agree on what to send to Government. Also to resolve with industry the conservation question (I have spoken with Kohli. We should arrange to meet with him and Segura before regional meeting). Also copy the Country Status Report to urban division in East Africa for comments. At regional meeting we should also discuss how investment priorities in energy are being reviewed in the Bank and whether we should help.
5. Kenya Water Heating. Ken should bring back the CIDA report. We should definitely contact CIDA on their plans before we do anything ourselves. Dosik should also be involved.
6. Malawi Tobacco Industry Efficiency. Consultants have been identified and recruitment is underway. Kayire and Wagner (EAP) have all the details. One of the two consultants (Lambert) will visit Bank on June 12 for preliminary discussions with Wagner and Kayire, on his



way to Zimbabwe (to meet other consultant) and then arrive in Malawi on June 16. TOR's have been drafted for both. Kayire will finalize on Monday. These can be issued with a simple covering memo as the Activity Initiation Report. Only an estimate of cost is required. Raquel will provide this. Suggest we stick to direct costs for this, but put in 4-6 staff weeks of staff time as an additional item in the cost.

7. Malawi Institutional Arrangements. On hold. No action required.
8. Rwanda Country Status Report. Noel is drafting. Mission will be in July (with Burundi). We should send telex off to Government for clearance of mission. Noel has instructions.
9. Sudan Management Information System. Final report (ACR) will be taken to Sudan by Robin to obtain Government clearance for distribution to other agencies. I have discussed with Robin. Chris will organize printing of report before Robin's departure. We also need to circulate in house. I think we should put a green cover on this for the Government. Will put blue after clearance. Same applies to Kenya Country Status Report sent to Government.
10. Uganda Petroleum Improvement Arrangements. Noel has Ogmen's draft with my comments. He will contact Ogmen by mid-June to ask for additional information and documents needed to complete this report. If necessary, Noel will stop in Ankara on his way back from Rwanda/Burundi to discuss with Ogmen and finalize report thereafter. He has instructions.
11. Zambia Energy Sector Management. Akin will bring back some information on how to proceed. Please ask him to set this out in a note and if he has time, draft a preliminary Country Status Report for Zambia as well. We should make no commitments on this until I return.
12. Zimbabwe Power Loss Reduction. I don't think much can be done with this report. Sear should spend 2-3 days on this tidying it up as best as can be done. We might then issue it as a completed activity but I wouldn't like to circulate it widely.
13. Niger Efficiency improvements in Air Conditioning. Noel is reviewing Petcu's proposal for a \$2 million program to start off this project. From what I've seen the proposal itself is good enough to issue as an Activity Completion Report with only a little editing, etc. It identifies a

project and provides brief justification and scope of work. We should raise this as one project for the Canadians (on which more later).

14. Indonesia Country Status Report. On hold. But Ansari may usefully do the first half of the Country Status Report as he is not going to Sri Lanka. We could then send it to RSI for them to fill in the second half (implementation of recommendations).
15. Papua New Guinea  
Country Status Report. No action required.
16. Bangladesh  
PIPE. No action required.
17. Sri Lanka  
Power Loss Reduction. Sear expects to have a draft report by June 15. Generation Report is ready but Lindsay's lagging on distribution. Please ask Ted to review before my return.
18. Bolivia Linear Programming Model. Ursula is producing some TOR's for activity initiation report but needs to be pushed a bit. Andres could help. We might as well get this out of the way as its a fairly simple operation to implement. Also a candidate for Canadians.
19. Bolivia Conservation. On hold.
20. Panama Power Loss Reduction. The latest report is ok for distribution. I don't think we'll get much more out of the present team. Suggest we finalize in Activity Completion Report and send out. Good generation project potential.
21. Zimbabwe/Zambia  
CAPCO Study (not on Status Report)--Gerhart is preparing detailed TOR's for Damry's reconnaissance mission and will prepare a draft AIR along the lines I have discussed with him. Problem is that it may be difficult to hire Damry. I have asked him to handle this directly and come back once it has been sorted out.

#### Other Items

##### Senegal

I have made all the changes/updating on the green cover which Noel is finalizing. English version should be ready to go to Programs by June 11. French a week later. De Raet has been forewarned to expect them and to arrange for clearance to print in blue. We should have



sent to Government by end of June.

De Rael and Thiam want us to assist in defining the detailed scope of work of the two advisors under the Energy Technical Assistance Project. Also to help establish the conservation program. De Raet is amenable to having a separate TA project which we would execute. Alternatively we could use ESMP funds or get resources from them to finance our staff to help them straighten out existing project. Either Thiam or De Raet may call you on this, or Hal if you have left. Please stall till I return.

Gambia

Once Kwei returns, we should circulate the existing draft to the Front Office/Regions noting that the mission to discuss and finalize this with the Government is planned for July. We need to sort out the mission as well. Kwei could go with one/two consultants and I could backstop for a couple of days. Zia Kalim is also a possibility. Please discuss with Hal.

Desai

His TOR's have been discussed with Ted and should be printed on Monday. He knows what to do and should be able to get on with it.

Ansari

We need to find something for him to do now that Sri Lanka has been delayed. He could do the Indonesia Country Status Report draft to send out to the RSI but that won't keep him too busy. One thing he could do next week is organize the project profiles for the Canadians.

Canadians

I have discussed with Sear and Noel to put together half a dozen project profiles. These would be for generation plant rehabilitation projects in Sri Lanka and Panama. \$1 million in each country but with components so smaller amounts can be accommodated.

Bolivia - LP model                    \$125,000  
Bolivia - Conservation                \$350,000  
Niger - Energy Improvements in Air Conditioning \$2 million but they could also finance just feasibility phase.

Kenya - Power Loss Reduction proposal \$50,000  
Kenya - Solar Water Heating. Amount to be determined upon Ken's return.

Ansari could organize putting these together in a consistent format.

UNDP

Cox. Please ask them to set up a Trust Fund for the ESMP/EA work along the lines we discussed. This should



keep Cox busy for a while.

Power Loss Reduction

I had a brief discussion with Jim yesterday. The bottom line is:

- (i) we should do the mini study proposed for Kenya. \$40,000-\$50,000 would include generation efficiency and also a preliminary look at distribution to define how a loss reduction program could be set up. No field testing on computers, etc. Short project identification report. I am not convinced that this is going to work but lets try it out on a couple of countries to see. Jim should prepare a scope of work for precisely what would be done in this study. We would issue that as AIR. We should not use Kenya project money for this. If we think it'll work lets do it directly from ESMP. We should not offer the Kenyans the alternative of having either the \$40,000 mini study or \$140,000 old style study. They do not have enough information to make a rational decision. We do; we know the old style study isn't the right way.
- (ii) Regarding other studies--lets hold off until Kenya is done to see whether this mini alternative concept is worth extending to other countries.
- (iii) Existing Reports--these should be finalized by June 30th and issued. Completing these reports should be Sear's primary responsibility. He should not get involved in the Kenya exercise. This should be managed directly by Ted.
- (iv) Extension of Contracts--Bank's contract should be reviewed for six months. He should start off with Kenya. Sear's contract will call him if we need him for specific assignments. Lindsay I am uncertain about. He has been slow in producing the worth and if we don't plan to use the computer during the studies then we might be able to find a better distribution engineer to complement Banks. We need Jim's/Ted's views on this but in any event we should not extend Lindsay on anything but a three month trail period. There is also no need to review the other staff working on this project.
- (v) Management--Please get a decision on Ted. If he can't move done pretty much straight away then we really need to re-think on whether we should embark on loss power work until we can find an alternative for him.

I may have forgotten something but you can always reach me in PNG or Pakistan. I plan to arrive in Karachi on Sunday 12th if I can sort the flights out. Please let me know if we get the \$2 million from Ernie!

Masood

Chron

FORM NO. 75  
(9-78)

THE WORLD BANK

<b>ROUTING SLIP</b>		DATE: June 2, 1983	
NAME		ROOM NO.	
Messrs. Rovani, Rao, Bharier			
APPROPRIATE DISPOSITION		NOTE AND RETURN	
APPROVAL		NOTE AND SEND ON	
CLEARANCE		<input checked="" type="checkbox"/> PER OUR CONVERSATION	
COMMENT		PER YOUR REQUEST	
FOR ACTION		PREPARE REPLY	
INFORMATION		RECOMMENDATION	
INITIAL		SIGNATURE	
NOTE AND FILE		URGENT	
REMARKS:			
FROM: Masood Ahmed		ROOM NO.:	EXTENSION:
		D449	74545



## OFFICE MEMORANDUM

TO: Mr. Ernest Stern, Acting Vice President, EIS      DATE: June 2, 1983

FROM: Yves Rovani

SUBJECT: Energy Sector Management Program (ESMP): Progress Report and Request for Bank Support

1. The purposes of this memo are
  - (i) to bring you up-to-date on the progress made in establishing the above program; and
  - (ii) to request an initial allocation of Bank resources to supplement the limited amounts of finance already received for ESMP's operations in FY84/85 and encourage greater financial support from other sources.
  
2. The first quarterly status report on the ESMP has just been prepared and is attached as Annex I. We have focussed our initial efforts in establishing the ESMP on three areas:
  - (i) developing detailed operational procedures and review mechanisms to ensure the quality and relevance of ESMP activities (see Annex II);
  - (ii) reviewing the status of implementation for the major recommendations made in the energy assessments completed 12 or more months ago;
  - (iii) providing a small amount of assistance under the ESMP for activities which are clearly urgent and of high priority.
  
3. In parallel, we have supported UNDP's efforts to solicit funding for the program from potential bilateral/multilateral donors. To date these efforts have resulted in a committed allocation of about \$1 million per year to the ESMP for FY84-85, far below the \$6 million and \$8.5 million envisaged for these two years in the original proposal described in the November 1982 Progress Report. We are convinced from our discussions with the various donors that additional contributions to the ESMP will be made (see Annex III) but we face three problems. First, the internal budgetary and allocation procedures in these agencies make it extremely unlikely that the contributions can actually be effected during FY84, even if we get a commitment in principle in the next few months. Second, it is already clear that efforts will be made by the agencies to tie their contributions in some way; negotiating such contributions (which may involve 'bending' some Bank rules) will entail high administrative costs, as will the project-specific or donor-specific reporting and accounting procedures likely to be associated with tying. Third, since the current level of funding is insufficient to establish a credibly sized program in the coming year, there is a danger that some of the donors who have promised or are considering contributions for later years may have second thoughts on such contributions.

4. Given these factors, our immediate objective should be to build up the program rapidly to a respectable size, building on the momentum created by the Assessments Program and enabling us to fulfil expectations generated by the November 1982 Progress Report. There seems no alternative but to use Bank resources for this while we continue our efforts to mobilize funding from other sources. We believe that by providing a credible level of activity in the recipient countries and for the program as a whole, this would

- (i) demonstrate the importance that the Bank attaches to this Joint Program;
- (ii) help to release more funds more quickly from potential donors;
- (iii) strengthen our negotiating position in regard to the terms on which these contributions are finally made; and
- (iv) enable us to attract and retain the necessary core staff to establish the various elements of the program.

5. Given the number of countries involved and the nature of the requests for ESMP assistance we have already received, we believe that the minimum credible program is about \$4 million per year in FY84 and FY85. Since we already have \$1 million per year from UNDP, this translates into a Bank contribution of \$3 million per year for both years. (All of this would have to be additional as the Bank has not made any contribution into the program so far.) It is quite likely that some of the money needed for FY85 will become available from other sources during the next twelve months. In that event we would draw a proportionately lower amount from the Bank's resources.

6. Our request, therefore, is for an allocation of \$3 million from Bank resources for the FY84 operations of the ESMP and a commitment of the same amount for FY85 to enable us to hire staff on a two-year fixed-term basis. We will report to you by December 1983 on the progress made on obtaining other funds for FY85 ESMP operations, at which time the final allocation of Bank resources for that year could be decided.

Attachments

MAhmed/JBharier:cra



## OFFICE MEMORANDUM

TO: Julian Bharier, Chief, EGYEA

DATE: June 3, 1983

FROM: Masood Ahmed

SUBJECT: Power Loss Reduction Project

1. As I mentioned to you, I have serious reservations about extending the type of work that we have done in Zimbabwe, Panama and Sri Lanka on power distribution loss reduction to other countries. I have discussed my reservations with Messrs. Sear and Albouy who share them to a large extent. As this issue is likely to come up during my absence in Papua New Guinea/Sri Lanka, I am setting out below the position that I believe we should adopt in regard to further work in this area.

2. First, it is useful to separate the work that has been done on generation plant efficiency improvements from the distribution loss analysis. Both the Panama and Sri Lanka studies had a generation efficiency component where All Banks looked at existing generating plant and identified measures to improve their efficiency. In both cases this effort has been extremely productive. He has identified concrete and well defined projects which, although small (about \$1 million in each country), have high and quick payoffs and can be implemented immediately. We should be able to find many donors who would be happy to finance these improvements, and the projects have been sufficiently well defined for these donors so that their implementation should not pose any difficulties. Therefore I propose that we unreservedly support further work of this nature in other countries under the ESMP.

3. My main problem is with the distribution loss reduction work which has accounted for the bulk of the cost of these studies. When we embarked on the program we believed that this work would also lead to the identification of concrete projects which would result in lower losses. It is now clear that this is not the case. The reasons for this were spelled out in Vaughan Sear's memorandum of April 4 (attached) and can be summarized as follows:

- (i) much of the data required to run the complete program on sample circuits is not available, so the results for these circuits are based on assumed input values; actual input data would need to be gathered and fed in before the program could be used to implement loss reduction measures in those circuits.
- (ii) The presence of substantial but unquantified non-technical losses on these circuits introduces further inaccuracies in the results; moreover, it is becoming increasingly clear that a loss reduction must also focus on reducing these losses.
- (iii) The characteristics and profiles of individual circuits vary so much that the results of the analysis on a few sample circuits cannot be extrapolated to the system as a



whole even if all the relevant data for the sample circuits were available.

- (iv) Loss reduction is best undertaken in conjunction with a broader review of distribution system design standards which have changed because of higher generation costs.
- (v) Losses are part of a larger problem involving poor maintenance, inadequate staff capability (non-competitive salaries) and a general neglect of transmission and distribution systems in recent years because of financial difficulties and pressures to add generation capacity.

4. These findings do not detract from the urgency of reducing power distribution losses; indeed, if anything, the work done so far has confirmed that the potential and economics of loss reduction are even better than we had initially envisaged. However, what they do call into question is whether the approach we are following is the best way to achieve these lower losses. The principal contribution of the studies as they have been carried out so far is a demonstration effect. Using the data for a particular country and working on site, the project team can help demonstrate to utility managers that there is an untapped potential for loss reduction in their systems. It also demonstrates the merits of using a simple computer to analyze distribution circuits as a means of developing loss reduction program. However, we need to ask whether such a demonstration is necessary as a generalized procedure. I believe that many utility managers already recognize the potential for reducing losses and some are also familiar with the use of computer-based procedures to analyze these losses. For this group, further demonstration is not required. Turning to those utilities who are not yet convinced of the potential for loss reduction, before we spend \$140,000 on a demonstration exercise we should attempt to convince them through an oral presentation by power staff visiting the country and using the Zimbabwe, Panama and Sri Lanka report as supporting evidence of the kinds of savings that can be realized in this area. I believe that this will be adequate in almost all cases. The logic of reducing losses is simple and clear--generation costs have quadrupled; existing losses are too high even for the old level of costs, ergo much too high for current costs; other countries developed and developing--have successfully demonstrated that these losses can be reduced dramatically by using simple measures involving capacitors, reconducting, etc; a cheap desk top computer makes this analysis easier and simpler and is being used increasingly by utilities; here are three reports on how a Bank sponsored team identified significant loss reduction potential in very different types of systems, etc., etc.

5. I am sure that there will be some countries where the above will need to be supplemented by an on-site demonstration of the computer model. But these will be isolated cases and in some of them we would need to ask whether even an on-site demonstration will generate the necessary commitment.



6. Given these problems, what should we do to accelerate the implementation of loss reduction programs in the developing countries? I would propose a different approach which would tackle loss reduction through the vehicle of our power lending. The comparative advantages of this approach include:

- (i) The number of power operations would enable a reasonably large effort to be launched; if we ensure that half of the 20 or so power loans each year have a loss reduction component, it would make a major contribution in this area.
- (ii) Association of loss reduction with ongoing Bank involvement in the power sector would permit consideration of the broader issues (non-technical losses, maintenance, salaries, etc.) on which the success of this program also depends;
- (iii) Involvement of Bank staff familiar with the country and the utility would increase the credibility and relevance of the effort and allow for continued supervision of the program, which is clearly preferable to a one-shot affair.
- (iv) Accelerate the implementation of loss reduction programs by going directly to the implementation stage once the general potential for reducing losses had been identified in any country.

7. In effect, what is required to achieve loss reduction is to set up a mechanism in the country to begin the systematic collection of data, analysis of circuits and implementation of measures (capacitors, reconducting, altered load dispatch, etc.) to reduce losses on these circuits. This would be a continuing activity moving from one group of circuits to the next as each was completed. The pace at which the work was carried out would depend on the specific circumstances and staff availability in each country. Initially, external consultants would be necessary to set up the program and to train utility staff in using computer-based analytical procedures. Over time, utility staff would take over this function as part of their regular operations. The Bank's project would finance both the initial computer and associated software and the services of a consultant firm to establish the system for, say, 12 - 18 months.

8. Regional staff are likely to be receptive to this approach. The May 24 presentation of the program attracted about 20 regional projects staff who were all interested in following up on loss reduction. Moreover, regional receptivity would increase if they were to participate directly in this program. However, they will need support and guidance from EGY, at least in the first year. While they are familiar with the general concepts and methodology many would need help in identifying the scope of work and approximate size for a power loss reduction component, and in selecting consultants and equipment, drawing up terms of reference and monitoring the progress of work.

9. The principal contribution that I envisage for EGY is therefore to provide this technical support. To achieve this we need to have someone in the Department who can take primary responsibility for advising regional staff in this work and who would also participate as necessary in preparation, appraisal and supervision missions for projects with a loss reduction component. This person would also be responsible for disseminating the progress on this work to regional and other staff at regular intervals. This could be a two-year fixed-term assignment because by then regional power divisions should have developed a capability to carry out this work themselves.

10. If this approach is accepted, the immediate operational implications would be:

- (i) to identify and take on board such a "lead" person for power loss reduction;
- (ii) to ascertain which of the next dozen power appraisal missions are for projects where a loss reduction component could be profitably included;
- (iii) to begin discussions with the division chiefs and project officers for these projects on including such components;
- (iv) to complete the three draft power loss reduction studies on Zimbabwe, Sri Lanka and Panama so that they can be used as samples for demonstration purposes in other countries; and
- (v) to not extend beyond June 1983 the operations of the power loss reduction program as it has been carried out so far.

Attachment

cc: Messrs. Rovani, Rao, Sheehan, Fish, Moore, Sear, Albouy, Wackman,  
Kalim

MAhmed:cra





# Record Removal Notice

<b>File Title</b> Masood Ahmed - Chronological File - January to June 1983		<b>Barcode No.</b>  1540569		
<b>Document Date</b> 6/2/1983	<b>Document Type</b> Memorandum			
<b>Correspondents / Participants</b> To: Vivian Siervo From: Julian Bharier				
<b>Subject / Title</b> Dr. N. B. Prasad				
<b>Exception(s)</b> Personal Information				
<b>Additional Comments</b>		<p>The item(s) identified above has/have been removed in accordance with The World Bank Policy on Access to Information. This Policy can be found on the World Bank Access to Information website.</p> <table border="1"><tr><td><b>Withdrawn by</b> Bertha F. Wilson</td><td><b>Date</b> November 2022</td></tr></table>	<b>Withdrawn by</b> Bertha F. Wilson	<b>Date</b> November 2022
<b>Withdrawn by</b> Bertha F. Wilson	<b>Date</b> November 2022			

Mr. Rao.

6/1/83

cc. Ms. Ribe, Mr. Taylor,  
Mr. Kahim.

attached is the note for  
Mr. El-Naggar.

A cleaner version of the  
~~att~~ Xeroxed table is on  
its way over from Peter  
Pollak's office. I will  
send it up when it  
arrives.



NOTE

Energy Transition in the Developing Countries

1. This note provides additional background information on the oil import projections used in the above report and on recent changes in the pattern of international trade in petroleum.

Oil Import Projections in the Report

2. Over the 1980-95 period, net oil imports for the oil importing developing countries are projected to grow at an average annual rate of 1.8%. However, this average growth rate subsumes two periods: 1980-1990 when oil imports are projected to remain roughly constant, and 1990-1995 when they grow at about 4.7% per year. The explanation for this lower growth in oil imports before 1990 relates to the projected evolution of both oil consumption and production in these countries. On the consumption side, as the following table shows, oil demand is projected to grow only half as fast during the 1980's as compared with the first half of the 1990's. This is partly due to the effect of lower economic growth in this period and, consequently, a slower rate of increase in total energy consumption. More importantly, however, it reflects the fact that many of the oil substitution programs in the OIDC's are projected to take effect during the 1980's. In the 1990's additional oil substitution will be more difficult because the "easier" substitution opportunities--for example in power generation or in large industries--will already have been realized. This anticipation is also reflected in the rapid rate of increase projected for the consumption of non-oil energy sources during the 1980's.

3. The projected oil production profile for the OIDC's accentuates this impact. Over 70% of the projected increase in OIDC oil production over 1980-95 is expected to take place before 1990. In part, this reflects the generally conservative approach we have adopted in forecasting oil production from as yet undiscovered reserves and basins. The juxtaposition of the above consumption and production profiles results in a very slow rate of increase in oil imports in the 1980's followed by an average growth rate of over 4.5% a year in the first half of the 1990's. This difference would be reduced in the event of a delay in implementing either the fuel substitution programs or the domestic energy production programs in the OIDC's.



Energy Production and Consumption in Oil-Importing  
Developing Countries, 1980-95

	Million TOE			Average Annual Growth Rate (%)	
	1980	1990	1995	1980-90	1990-95
<u>Consumption</u>					
Oil	360	438	531	2.0	3.9
Non-oil	<u>310</u>	<u>632</u>	<u>868</u>	<u>7.4</u>	<u>6.6</u>
Total	<u>670</u>	<u>1070</u>	<u>1399</u>	<u>4.8</u>	<u>5.5</u>
<u>Production</u>					
Oil	65	131	145	7.3	2.1
Non-oil	<u>317</u>	<u>613</u>	<u>805</u>	<u>6.8</u>	<u>5.6</u>
Total	<u>382</u>	<u>744</u>	<u>950</u>	<u>6.9</u>	<u>5.0</u>
<u>Net Oil Imports</u>	295	307	386	0.4	4.7

International Oil Trade

4. The attached table on the "World Exports of Crude Oil and Refined Products" was taken from the Annual Statistical Bulletin, 1981 published by OPEC. It shows that OPEC's share in the international trade of crude oil and refined products has declined from an average of over 70% during the late 1960s and early 1970s to about 57% in 1981. The preliminary figures for 1982 suggest a further decline in OPEC's share to about 50%. The decline in OPEC's share is largely due to a corresponding increase in the exports from the non-OPEC developing countries (notably Mexico) and from the North Sea producers.

EGY/MAhmed

June 1, 1983

Table 31

**WORLD EXPORTS OF CRUDE OIL AND REFINED PRODUCTS, 1962-1981**  
THOUSAND BARRELS PER DAY

EXPORTER	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
NORTH AMERICA	433.4	469.4	501.7	510.0	574.2	782.3	737.6	784.5	934.9	1002.6
LATIN AMERICA	4217.7	4350.1	4501.9	4556.4	4513.8	4699.7	4802.3	4925.5	5173.3	5111.0
WESTERN EUROPE	1336.4	1478.2	1328.9	1546.6	1707.9	1825.6	1914.2	2240.8	2561.8	2550.8
MIDDLE EAST	5896.6	6539.3	7320.0	8001.7	9278.3	9695.0	10877.2	11910.3	13393.8	15504.0
AFRICA	773.5	1161.3	1656.9	2168.8	2741.1	3017.6	3860.4	4995.4	5961.8	5556.3
ASIA AND FAR EAST	541.9	528.6	574.4	674.0	679.5	950.1	1018.2	1250.3	1162.8	1413.8
OCEANIA	44.7	47.9	32.0	21.8	29.2	30.9	25.1	17.3	37.3	45.9
SINO-SOVIET COUNTRIES*	631.6	721.4	824.3	910.9	1098.0	1196.4	1637.5	1725.8	2106.4	2316.5
WORLD TOTAL	13875.8	15296.2	16740.1	18390.2	20622.0	22197.6	24872.5	27849.9	31332.1	33500.9
OF WHICH:										
OPEC AREA	9669.6	10728.7	12135.0	13406.2	15134.5	15907.0	17794.1	19762.7	22196.4	23846.2
OPEC PERCENTAGE SHARE IN WORLD EXPORTS	69.7	70.1	72.5	72.9	73.4	71.7	71.5	71.0	70.8	71.2
EXPORTER	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
NORTH AMERICA	1267.6	1434.6	1218.8	1016.5	776.9R	700.6R	813.5R	990.4R	973.8R	1029.0*
LATIN AMERICA	5009.4	5381.5	4959.6	4029.0	4096.9R	4088.3R	4091.0R	4503.7R	4424.6R	4580.0*
WESTERN EUROPE	2736.8	3143.1	2646.6	2399.9	2680.6R	3139.5R	3342.5R	3862.5R	3913.8R	4133.0*
MIDDLE EAST	17453.2	20235.0	20982.3	18766.6	21347.9R	21212.7R	20160.8R	20588.1R	17543.0R	14826.0*
AFRICA	5549.5	5738.2	5182.5	4747.7	5612.4R	5763.2R	5480.2R	6055.1R	5397.9R	4068.0*
ASIA AND FAR EAST	1726.7	1921.1	1882.6	1709.9	2250.6R	2544.7R	2552.2R	2588.7R	2539.7R	2506.0*
OCEANIA	60.7	68.6	35.0	76.8	78.9R	83.7R	101.9R	106.9R	95.0R	69.0*
SINO-SOVIET COUNTRIES*	2446.0	2661.3	2849.2	3089.7	3197.4R	3413.7R	3495.7R	3614.1R	3640.5R	3980.0*
WORLD TOTAL	36249.9	40583.4	39756.6	35836.1	40041.6	40946.4	40037.8	42309.5	38528.3	35191.0
OF WHICH:										
OPEC AREA	25870.8	29521.6	29147.7	25623.6	29333.5	29392.1	27976.8	28909.7	24883.1	20126.9
OPEC PERCENTAGE SHARE IN WORLD EXPORTS	71.4	72.7	73.3	71.5	73.3	71.8	69.9	68.3	64.6	57.2

1/ FIGURES INCLUDE ALSO EXPORTS OF PETROLEUM PRODUCTS FROM PLANTS  
R REVISÉD

SOURCE: DIRECT COMMUNICATIONS TO THE SECRETARIAT  
U.N. WORLD ENERGY STATISTICS  
U.S. DEPARTMENT OF ENERGY, INTERNATIONAL PETROLEUM ANNUAL AND ENERGY DATA REPORTS  
BP STATISTICAL REVIEW OF THE WORLD OIL INDUSTRY.



**WORLD BANK OUTGOING MESSAGE FORM Telegram, Cable, Telex**

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TO:

A MONSIEUR NDIAWAR FALL, MINISTERE DU DEVELOPPEMENT INDUSTRIEL ET  
DE L'ARTISANAT, DIRECTION DE L'ENERGIE. MERCI DE VOTRE TELEX  
RECU LE 25 MAI STOP NOUS ~~TERMINONS~~ REVISION DU RAPPORT ET VOUS  
EN ENVERRONS 100 EXEMPLAIRES AUSSITOT QU'IMPRIMES STOP SALUTATIONS  
DISTINGUEES STOP ET FIN. MASOOD AHMED, DEPARTMENT DE L'ENERGIE,  
BANQUE MONDIALE.

END  
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TEXT

NOT TO BE TRANSMITTED

CLASS OF SERVICE: **FR/TELEX**

TELEX NO: **258 SG**

DATE: **5/31/83**

SUBJECT:  
**SENEGAL REPORT #BLUE COVER**

DRAFTED BY:  
**NKing:cra**

CLEARANCES AND COPY DISTRIBUTION:

**cc: Mr. de Raet (WA2)**

AUTHORIZED BY (Name and Signature):  
**Julian Bharier**

DEPARTMENT:

**ENERGY**

SECTION BELOW FOR USE OF CABLE SECTION

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TO:

INTBAFRAD COLOMBO. FOR LATEEF. RE PROPOSED ENERGY SECTOR FOLLOW-UP MISSION. FORAID (MOHAMED) HAS INDICATED THAT JUNE 12 TIMING WILL NOT BE CONVENIENT BECAUSE MANY CONCERNED OFFICIALS WILL BE UNAVAILABLE. GRATEFUL IF YOU COULD FIND OUT WHETHER THIS REFERS ONLY TO FINANCE/PLANNING OFFICIALS IN WHICH CASE, AS WE DISCUSSED IN WASHINGTON, THE MISSION NEED NOT NECESSARILY MEET WITH THEM. IF ENERGY SECTOR OFFICIALS AND PARTICULARLY MOHAM WILL ALSO BE UNAVAILABLE THEN WE COULD DELAY THE MISSION. I WOULD SUGGEST ALTERNATIVE DATE OF JUNE 20TH SINCE I WOULD STILL BE IN THE AREA. HOWEVER, DELAY BEYOND JUNE 20TH WOULD MEAN A SEPARATE TRIP WHICH PROBABLY COULD NOT BE SCHEDULED BEFORE FALL FOR MYSELF. ANSARI ALONE COULD VISIT BEFORE SEPTEMBER BUT I THINK IT WOULD PREFERABLE THAT I JOIN HIM FOR PART OF THIS MISSION. APPRECIATE YOUR EARLY RESPONSE AS I AM LEAVING WASHINGTON ON JUNE 4. THANKS AND REGARDS MASOOD AHMED, ENERGY DEPARTMENT.

21 END  
OF  
22 TEXT

NOT TO BE TRANSMITTED

CLASS OF SERVICE: **FR/TELEX**

TELEX NO.: **954-21410**

DATE: **5/31/83**

SUBJECT: **MISSION TO SRI LANKA**

DRAFTED BY: **MAhmed:cra**

CLEARANCES AND COPY DISTRIBUTION:

AUTHORIZED BY (Name and Signature):

cc: Mr. F. Ahmed

**Julian Bharier**

DEPARTMENT:

**ENERGY**

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distribution; fca

Mr Shibusawa

Mr. Bharier

21232 FORAID CE

31-05-83

WORLD BANK

WASHINGTON D.C.

ATTN: FAKRUDDIN AHMED, SOUTH ABIA PROGRAMS - COPY MASOOD AHMED.  
ENERGY DEPT.

REURTLX OF 27TH MAY, 83 TO MOHAN MUNASINBHE. PROPOSED VISIT ENERGY  
MISSION JUNE 12 TIMING INCONVENIENT SINCE MANY OFFICIALS CONCERNED  
WILL NOT BE AVAILABLE FOR CONSULTATION. WE WILL ADVISE LATER  
CONCERNING MUTUALLY AGREEABLE DATES.

REGARDS,

ACKIEL MOHAMED

FORAID

21232 FORAID CE

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cc: Mr. F. Ahmed



## OFFICE MEMORANDUM

TO: Messrs. Rovani, Rao, Bharier

DATE: May 31, 1983

FROM: Masood Ahmed SUBJECT: KENYA: Country Status Report

1. The following may be useful background information for our planned meeting to discuss the above report.
2. In general the report has been favorably received both within and outside the Department. Written comments sent by Messrs. Bauer, Gusten (EAP) and Sam (IND) are attached. Programs have also said that this is extremely useful and they hope to follow-up on some of the policy recommendations in the next SAL.
3. The two questions which we need to discuss are first, the distribution of the report and second, follow-up through the ESMP. As regards distribution, the report has been circulated to all concerned Bank staff (see distribution on covering memorandum). The next step is transmission to the Government which Programs support, but after some minor editing/desensitizing. The question of circulation to other donor agencies is less clear. I think we should, unless the Government has any objections. We can ask them in the covering letter to the report when it is sent to them.
4. In terms of ESMP follow-up the two immediate priorities are pre-feasibility work on the solar water heating project and industrial conservation/coal substitution. Ken Newcombe is obtaining more information on the first, where the only sensitivity we have to look out for is that CIDA have already done some preparatory work (market study). We would touch base with them on their future plans in this area and could use this project as a vehicle for collaboration. On the industrial conservation proposal, everyone agrees that it is important/urgent. The stumbling block is that it is included as a component in a stalled IND refinery project, with differing views on how quickly this project is likely to become de-blocked. IND also feel that pre-feasibility work on this would be useless; an integrated \$300 - 500,000 effort is needed. If true, this would be too large for the ESMP. However, this is also a type of project where we could get other donors involved. The main issue is whether keeping this component in the refinery project is likely to result in unreasonable delay for reasons unrelated to conservation.


Attachments



# OFFICE MEMORANDUM

TO: Distribution

DATE: May 11, 1983

FROM: Julian Bharier, Chief, EGYEA 

SUBJECT: KENYA - Status Report on Energy Assessment Follow-up

1. Attached please find a copy of the above report which outlines the progress made to date in implementing the major recommendations of the Energy Assessment Report of May 1982. The report also identifies those areas where further technical assistance will be required to evaluate Energy policy or investment options.

2. I would welcome your comments on this report which is one of the first of its type. This report was prepared under the Joint Bank/UNDP Energy Sector Management Program.

**Distribution:**

Kraske, Dunn, Anderson, Uluatam (EAI), Bronfman, Erkmen, Gusten, Ms. Marshall(EAP), Kohli, Segura, Ms. Haug (IND), Rovani, Rao, Bourcier, Sheehan, Sadove, Fish, Dosik, Davis, Hughart, Bauer, McCarthy  
EGYEA Staff

MAhmed:ff



# Joint UNDP/World Bank Energy Sector Management Program

Activity Completion Report

No. 4483-KE

**DECLASSIFIED**

NOV 30 2022

**WBG ARCHIVES**

Country: KENYA

Activity: STATUS REPORT ON ENERGY ASSESSMENT FOLLOW UP

April 1983



## ABBREVIATIONS

AFC	Afro-Chemical Food Company, Kenya
CIDA	Canadian International Development Association
E/DI	Energy/Development International
EAP	East Africa Projects Divisions, World Bank
EAPC	East Africa Portland Cement Company
EAPL	East African Power and Light Company
EGY	Energy Department, World Bank
ESMP	Energy Sector Management Program, UNDP/World Bank
GOK	Government of Kenya
GTZ-SEP	German Agency for Technical Cooperation - Special Energy Project
ICS	Improved Charcoal Stove
IFC	International Finance Corporation
IND	Industry Department, World Bank
ITDG	Intermediate Technology Development Group
IWS	Improved Wood Stove
KCFC	Kenya Chemical and Food Corporation
MEPD	Ministry of Economic Planning and Development
MOE	Ministry of Energy, Kenya
TA	Technical Assistance

KENYA ENERGY ASSESSMENT  
Status Report on Follow-up

1. BACKGROUND

1.1 The Kenya energy assessment mission of March 1981 produced a draft report which was reviewed with the Government in March 1982; the final report was issued in May 1982. Some of the findings of the report were used in determining the agreement for the second SAL of June 1982 which included an undertaking by GOK to furnish the Bank with a comprehensive energy investment program providing for both production and conservation sector wide. This document was sent for review by the Bank in March 1983, as agreed.

1.2 Economic conditions have deteriorated in Kenya since the 1981 energy assessment mission. Whereas net energy imports cost 36% of export earnings in 1980, by 1982 this figure had become 57%. GDP growth, reported at 3.8% in 1980, had fallen to about 3% in 1982 with little sign of improvement in 1983/84. Foreign exchange reserves have been drawn down consistently since 1980 to the point now where even the energy sector investment and aid, which is essential to retard the worsening balance of payments situation, is unable to be fully utilised due to severe stringencies on government expenditure limiting effective counterpart contribution. Continued disagreement between government and oil companies over refinery management and investment is further aggravating the impact of imported energy on economic development. In this situation relatively untrammelled assistance to the private sector and successful parastatals to implement fuel saving measures is vital, along with skilled advice to the government on policy measures.

2. RECOMMENDATIONS AND RESPONSES

2.1 POLICY ADVICE OFFERED

GOVERNMENT AND BANK GROUP RESPONSE

- |   |  |
|---|--|
| (i) Divert long haul freight to the railway on the Mombasa-Nairobi route as a matter of urgency. Savings of 12 million litres of diesel are forecast. | (i) GOK accepts this as a high priority policy objective but is unable to implement the transfer due mostly to continuing unreliability of operations by rail the main cause of which is lack of spare parts related in turn to limited foreign exchange availability. While containerisation of the rail cargo handling system proceeds it lags behind road transportation in quality and efficiency further reducing the competitive position of rail. |
| (ii) Do not implement the small diesel bus "Matatas" program on a large scale unless economic viability is well established.                          | (ii) The matatas fleet appears to have grown rapidly since the time of the assessment mission though without either government support or hindrance. Fares are maintained by owner/operators at 1 Ksh below the public bus system. There is no government  |



price control on matatas. This transport mode is more flexible and convenient for commuters. The fact that it is all diesel powered is recognised by GOE as undesirable and is being tackled indirectly as described in 2.1(v) below.

- (iii) Review the import duty on coal to ensure that it will not act as a deterrent to the economic substitution of fuel oil. Import duty was 30% of cif value in 1981. This recommendation was assigned high priority.
- (iii) In the 1981 budget speech the Ministry of Finance announced a reduction of duty of 10%, from 30% to 20% of cif price, indicating that further reductions, perhaps to the elimination of duty, may be later implemented. Since then across the board increases in duty have lessened the impact of this reduction. Currently import duty computes at 22.2% (US\$64.6 cif ex Maputo c.f. US\$14.36 duty per tonne).
- (iv) Reduce the differential between normal and off peak power tariffs to better reflect economic costs and benefits.
- (iv) New tariffs raise the ROR to 5% instead of the 8% agreed as a covenant to Bank lending. MOE stated that they attach little significance to this tariff measure having no firm view that it should be retained or removed. One reason EAPL has retained the facility is in deference to the 19000 householders with interruptable supply to whom the off-peak rate applies. This is an increasingly small proportion of electric hot water users. It is recognized by MOE that this domestic off-peak tariff will have to be reviewed as part of the solar water heating investment project.
- (v) Realign sales taxes on petroleum fuels to bring premium gasoline and automotive distillate prices close together and hence to reduce the distortion in demand for diesel in relation to refinery production. This recommendation was assigned high priority.
- (v) MOE indicated that the government's hesitance in reducing this differential was due to the financial impact on agriculture and manufacturing sectors, both heavily reliant on diesel. There is minimal data to quantify this impact hence to assess its real significance. As an alternative MOE has proposed a large increase in import duties for diesel vehicles. This paper is now with the Treasury which has authority to implement the measure without going to Cabinet. MOE expressed confidence that this measure would soon be adopted.

- (vi) Place all energy related programs under the Ministry of Energy and strengthen its structure and staffing.
- (vi) The MOE has grown substantially since 1981 and has placed expatriate advisors from E/DI in line positions. The German GTZ-SEP (Special energy project) have provided staff in an advisory role to the Ministry through not as departmental staff. The authority of the MOE is clearly related to its status within government. It is obviously subservient to the Ministries of Finance and Economic Planning and Development. MOE has greater capability to plan and establish investment programs for the sector than at the time of the assessment. However there remains serious disaggregation of responsibility and planning for woodfuels and for agroforestry with an obvious woodfuel component. It is not apparent that MOE is aware of the many initiatives being struck in this field in Kenya. It has limited influential coordinating responsibility to plan for, and to rationalize, activity in this sub-sector for some portion of which it is involved in both planning and implementation. Other ministries and agencies known to be involved are the Ministries of Environment and National Resources, Agriculture, Livestock, the Office of the President, and the womens organization Mandeleo Ya Wanake.
- (vii) The mission supported the merger of Kenya Power Company and the Tana River Development Company so as to reduce overheads and improve efficiency in this sub-sector.
- (vii) This merger remains Government policy and has been pursued more actively in recent months. MOE suggests that the unification of operations is almost effective and only the dual top management structure remains. MOE officials believe the official merger will occur quite soon.

## 2.2 STUDIES AND TECHNICAL ASSISTANCE PROPOSED

- (i) Complete pre-investment studies for the Turkwell hydropower project as soon as possible and examine the longer term interconnection with supply sources in Uganda and Tanzania as a matter of priority.

## GOVERNMENT AND BANK GROUP RESPONSE

- (i) EAP power staff will offer as part of upcoming Kiambere project loan negotiations technical assistance to devise the least cost development plan, considering also interconnection with neighbouring country supply systems. It should be noted that senior MEPD staff independantly raised the question of Bank assistance in establishing the potential for interconnection about which prospect they were most enthusiastic.



- (ii) Large-scale substitution of electric with solar water heating in households and industry appears economically attractive and hence a detailed program of large-scale installation should be developed as a matter of priority.
- (iii) The expanded use of wind energy and biogas should be studied.
- (iv) The potential to achieve energy self-sufficiency for all sugar mills and to generate surplus bagasse energy for sale should be studied.
- (v) Urgently review the entire ethanol program in order to rationalize and monitor production and end-use, focussing in the short term on maximizing cash flow for the KCFC distillery.
- (ii) CIDA has provided assistance through the University of Western Ontario to assess the market for solar water heating in Kenya as an assistance to Government and, in effect, to a Canadian solar water heating system manufacturer, Petrosun. Full details of the terms of reference and achievement of this aid project will be made available by CIDA and GOK as the outcome directly influences the scope of work of the agreed ESMP solar water heating investment project. In addition an engineer and an analyst funded by the World Solar Foundation of London are currently documenting the number and performance of solar installations now in use in Kenya.
- (iii) The main focus of the new German aid program "Special Energy Project" (GTZ-SEP) is wind, biogas and solar for small scale rural applications. The program is mounted as an advisory service to the MOE. It appears well focussed, realistic and well managed. It should achieve the objective specified by the energy assessment.
- (iv) Major reviews of sugar mill efficiency have been completed by SGV consultants under the Bank's sugar industry rehabilitation projects. These provide the basis for further analysis of net energy production though such work has yet to be undertaken. GOK has expressed keen interest in pursuing this option as a result of discussions during the follow-up mission.
- (v) GOK has not initiated a formal review although the debacle of the KCFC investment is clearly now the subject of cabinet discussions which are regarded by the civil service as highly sensitive and confidential (see 2.3(ii) below). MEPD recognizes that some rationalization must take place and has independently raised the prospect of Bank assistance here at some later date. Ethanol has begun to be delivered from the Moroni plant to blending depots. However blending, which was supposed to start on April 15, has been forestalled due to unresolved pricing issues between oil companies and the AFC. Consequently production at the Moroni plant has temporarily ceased. There is no doubt

that rationalization of this industry is important and should be pursued when political circumstances permit an open and objective appraisal.

- (vi) Improve the supply and demand data for charcoal.
- (vii) Examine prospects for increased commercialization of fuelwood and charcoal production including pre-investment work for major peri-urban and rural plantations and large scale carbonization plants; the latter within the context of a centralized charcoal corporation, or a series of cooperatives.
- (viii) Study the prospects for conversion to coal from oil in industries other than cement.
- (vi) Charcoal supply data remains deficient but demand data have been provided by the Beijer Institutes 'Fuelwood Cycle' study, now complete. The characteristics of feedstock conversion and supply patterns can be the subject of assistance under the ESMP, priority and funds permitting.
- (vii) There has been no systematic approach to pre-investment work on peri-urban woodfuel plantations. A conceptual beginning to this work has been made by MOE for Mombasa though to cater for only a small portion of the near term demand. Preliminary design and costing of plantation development for a range of systems near major demand centres have been completed by the Beijer Institute. These provide the basis for detailed comprehensive pre-investment work as a part of a national strategy to meet the centralized urban-industrial market. In addition the Shell Oil Company has proposed a 350,000 ha fuelwood development on semi-arid land to service an iron smelting industry. GOK has indicated a need for assistance to review this proposal; to design investments in peri-urban plantations; to better manage recovery of woodfuels from existing resources and to examine prospects for improving the efficiency of carbonisation.
- (viii) GOK has promoted conversion to coal, coal-oil mixtures and coal-water mixes in recent draft energy policy and investment strategies and the energy component of the draft five year development plan. No detailed planning is in place to facilitate implementation and only limited data exist on industrial energy use, plant by plant. There is an urgent need for clarification of coal handling capacity at Mombasa before committing to a detailed design phase on coal conversion at any of the several major fuel oil consumers besides EAPC. This would be an essential component of an ESMP project on interfuel substitution in the industrial sector.



(ix) Develop a program to encourage energy conservation in small and medium sized industry beginning with the establishment of a detailed data base on end-use.

(ix) The only progress made here by GOK is a survey run jointly by MOE and Association of Manufacturers to establish energy use within factories. A 35% response rate was achieved and no follow-up has proceeded. IND has offered a US\$300,000 TA as part of the refinery energy conservation and engineering design for reconfiguration loan. This is unlikely to proceed quickly to negotiation hence GOK has asked for assistance with industrial energy conservation under the ESMP facility. However, IND have stated that the TA offer should not be separated from the refinery project and that pre-feasibility work in this area would serve no purpose.

### 2.3 IMPLEMENTATION ACTIVITIES PROPOSED

(i) All investment in ethanol production should cease forthwith pending detailed reviews of the industry. This action is regarded as of highest priority.

(ii) Establish an extension service for distribution and demonstration of improved stoves concentrating first on improved 'jikos' for cooking with charcoal in urban areas.

### GOVERNMENT AND BANK GROUP RESPONSE

(i) GOK responded by halting all further new investment in ethanol production facilities as recommended. The KCFC plant, costing 1.5 billion KSh to date, has been put into receivership but no liquidation has taken place. MEPD officials expressed fears that since the investment is physically unprotected looting may be occurring. The planned Riana plant proposal has also been shelved. Again the view was expressed by MEPD, unsolicited, that the Bank may be able to help resolve the issue of future activity in the industry at an appropriate time.

(ii) The barrier to construction of an extension service for improved charcoal and wood 'jikos' has been the lack of suitable rapid production techniques and smallholder entrepreneur training for the very attractive (30-50% efficiency gain) jikos now fully developed and tested. The dissemination of production techniques and modular construction facilities must proceed marketing. This bottleneck is being steadily removed with assistance from ITDG. There is little doubt that a major marketing effort could create a huge demand. This phase should be closely monitored for if it appears to be lagging, through lack of funds or exertise, the Bank could profitably assist, at the same time gaining experience with promotion techniques in other African markets. The stage appears set in Kenya for one of the first really successful ICS/IWS campaigns.

- (iii) Establish an Energy Development Institute focussing on interdisciplinary research of socio-economic issues emphasizing applied energy economics. The institute should not be concerned with energy technology R&D. This action is not a high priority.
- (iv) Execute the optimal refinery configuration taking into account all options to meet the agreed demand.
- (v) Expand exploration for oil and gas building on initiatives already proposed by the Bank.
- (vi) Expand geothermal exploration in Olkaria field as a matter of priority and support continued exploration in Eburru and Lake Bogoria regions. Produce a detailed investment plan for the development of the geothermal resource.
- (iii) The proposed Kenya Energy Development Institute (KEDI) is only a little further towards realisation than at the time of the assessment mission. The MOE, which is the main arbiter on the structure and function of KEDI, supports the views of the Bank on the matter. This is not a high priority issue at this time.
- (iv) The Bank (IND, IFC), USAID and GOK have narrowed the options for refined products supply to an agreed reconfiguration of the refinery using thermal cracking technology. Investment is now prevented by disagreements between GOK and oil companies over issues of crude procurement, partitioning of revenues from refining, and refinery management. It is apparent that these issues will not be quickly resolved and that investment will be delayed, even assuming that the proposals prove politically tenable. MOE raised the issue of splitting the conservation and reconfiguration investments.
- (v) The EGY petroleum exploration promotion project has proceeded successfully through the first round of defining potential and soliciting interest in further exploration. These oil companies began to negotiate exploration agreements but have ceased as GOK is not prepared to change foreign exchange regulations in line with normal practice regarding repatriation of profits and foreign exchange availability.
- (vi) Since the assessment the Olkaria field has indicated even greater promise with the tapping of dry steam. EGY has begun appraisal of a project to expand geothermal exploration in the wider Olkaria region and the Rift Valley while EAP projects is proceeding under Power IV to finance expansion of power production from the existing Olkaria field. A long term investment plan should follow from these projects.



- (vii) Complete project preparation for, and execute oil to coal conversion at the East African Portland Cement Company (EAPC).
- (vii) EAPC has commissioned a full feasibility study by Norcem Engineering of conversion both from fuel oil to coal firing and from wet to dry processing. Expansion of overall production and the logistics of coal handling and transportation between Mombasa and Athi River have also been studied. The study is funded by NORAD as a grant. EAPC accepted this offer over Danish aid because Norcem had recently completed a similar study in Tanzania and also has no links with equipment suppliers. Savings of about US\$1 million in foreign exchange will result although the investment is very marginal financially at the present coal import duty rate. The EAPC chairman wishes to proceed with the investment nevertheless. The study indicates severe constraints on handling further coal imports over the 30,000 te/yr additional for EAPC.

### 3. RELATED ACTIVITIES BY OTHER AGENCIES

3.1 A very positive finding of the status report mission was the extent to which bilateral aid agencies are utilizing the energy assessment report for planning their own aid programs in the energy sector. Much used copies of the blue cover report were produced at the CIDA, Dutch aid and GTZ program offices, and the USAID, Beijer Institute and others referred to the document as the only comprehensive source document for energy sector analyses so far available.

3.2. It is apparent that the CIDA financed project reviewing the solar water heating market and the GTZ-SEP(see 2.2(iii)) are to some extent influenced by the assessments recommendations. The USAID project was mostly defined prior to the outcome of the energy assessment and will not be renewed beyond September 1984. This project has focused on the establishment of 6 agroforestry centres leading to training of extension workers of the Ministries of Agriculture and Environment and Natural Resources (Forestry Department). USAID co-operated directly with the Dutch in this project and in support of the Beijer Institutes 'Fuelwood Cycle' study. The Dutch Government intends to support the implementation of pilot projects on agroforestry arising from this study with US\$3-4 million over the next few years, again in co-operation with the Beijer Institute. USAID/EDI funding or in-line staff support for MOE will probably cease during 1984. Ongoing aid to the energy sector is therefore concentrated heavily in rural energy and in particular on fuelwood-focussed agroforestry. It is noteworthy that this is also the most uncoordinated of the energy sector programs, (see 2.1(vii)) and one in which further effort is necessary to establish priorities, and guidelines for effective management seems desirable.

4. FURTHER ACTIVITIES PROPOSED UNDER THE ENERGY SECTOR  
MANAGEMENT PROGRAM

4.1 A Series of discussions held with senior staff of the Ministries of Energy, Economic Planning and Development, Environment and Natural Resources, Industry, the EAP&L and the EAPC culminated in an agreed program of action which can be finalised by an official exchange of telexes. A ranked list of agreed projects is presented below. MOE and EAPL raised several other projects which may also be considered for ESMP support subject to clarification of scope, and of the existing commitments by both the Bank Group and other agencies. These include:

- (i) Power loss analysis for the main grid (submitted to UNDP but rejected, apparently due to lack of funds)
- (ii) An analysis of interconnection options to use major power resources of neighbouring countries
- (iii) A full tariff study to determine a long term as well as short term electricity pricing strategy

The best vehicle for these studies is the Banks loan for the Kiambere project now being negotiated, or failing that, the expanded Olkaria field development loan facility.

4.2 In order of priority:

SOLAR WATER HEATING

- (i) Pursuant to the recommendation of the assessment mission GOK is keen to proceed to detailed evaluation and project development for a major solar water heater installation program. The first stage of the project - economic analyses and market assessment - is at least partly complete. The project will review and if necessary, upgrade this phase before proceeding to detailed design of an investment package incorporating a financing plan and operational strategy for installation under EAPL's administration of 20,000-30,000 household solar systems plus industrial and commercial systems for hotels, hospitals and other users of low-grade hot water over a 4-5 year period. The Kenyan power system is energy rather than capacity constrained, hence solar energy will displace oil-fired generation at the margin. The project will assess the capacity of local solar system manufacturers to meet the anticipated demand and will identify training requirements for installation.

<u>Part I:</u>	3 man months
Market and economic studies for household and industry:	\$ 25,000
<u>Part II:</u>	12 man months
Preinvestment studies for household and selected commercial applications plus local production and installation strategy	\$100,000
<u>Total Project</u>	
<u>Duration:</u>	6 months
<u>Total Project</u>	
<u>Cost:</u>	\$125,000



EFFICIENT BAGASSE UTILIZATION

(ii) GOK wishes to further define the prospect identified by the energy assessment for upgrading sugar mill process energy efficiency to generate surplus bagasse for sale as power, or as a densified solid fuel for industry and households. A detailed review of the markets for surplus power and energy in both sugar production zones, and of the incremental costs and benefits of serving these markets, would complement the Banks sugar industry rehabilitation program. The Kenyan sugar industry is deteriorating financially due to artificially low sugar prices set by GOK which owns 98% of the Western zone industry. Any significant additional cash flow generated through relatively small investments with a high financial rates of return would be welcomed by industry management and GOK. This is to proceed only with a clear understanding by GOK that it does not in any way negate the need identified by the Bank (EAP-AGR) for revision of sugar industry pricing policies.

Phase I: 6 months:

- (i) Marketing studies: \$25,000
- (ii) Prefeasibility engineering reviews and economic analysis: \$50,000

Phase II: 12 months:

- (i) Full design and costing: \$200,000
- (ii) Investment planning and financing strategy: \$50,000

Total Project  
Duration: 12 months

Total Project  
Cost: US\$325,000

COMMERCIALIZATION AND IMPROVED MANAGEMENT OF WOODFUEL PRODUCTION

(iii) GOK accepts the assessment mission's view that the establishment of a national plan for commercial woodfuel plantations to meet urban and industrial demands is a high priority and must also incorporate a program for improved management of the existing woodfuel resource. Accordingly this project is to build on the work of the Beijer Institute and others to design and cost peri-urban woodfuel plantations for Nairobi and Mombasa, develop methods to improve the recovery of existing forest residues including improved efficiency of carbonization, and to develop improved management techniques for the coastal mangrove forests. GOK has also requested a review of recent private sector proposals for large scale woodfuel plantations as fuel for pig-iron production.

Part I: 12 man months

- (i) Economic forest management and woodfuel marketing and investment planning studies regionally and nationally \$100,000

In Parallel:

Part II: 6 man months

- (i) Commercial woodfuel plantation design and costing. Management and marketing reviews \$100,000

Total Project  
Duration: 6 months

Total Project  
Cost: \$200,000

RATIONALIZING ETHANOL PRODUCTION

(iv) The assessment mission conclusions regarding the need for urgent action to rationalize ethanol production is even more pertinent in the present situation than two years ago. The Ministry of Economic Planning and Development wishes to draw on the Bank's assistance for this purpose as and when this becomes politically possible. The project would review options for use or disposal of existing KCFC plant and blending facilities. A production cost and end-use monitoring system should also be established as a management tool for the remaining industry to permit ongoing adjustment in line with market conditions and economic viability.

Phase I: 6 man months  
(i) Productions audit, cost analysis and monitoring design: \$75,000

(ii) Prefeasibility on process optimization prospects: \$50,000

Phase II: 12 man months  
(i) Preinvestment studies on process modifications: \$100,000

Total Project  
Duration: 6 months

Total Project  
Cost \$150,000






Mr. J. Bronfman

Re: KENYA - Status Report on Energy Assessment Follow-up

1. This is one of the first of these new reports and, to my knowledge, the first concerning a country of our Region. I find it a most useful document. The succinctness of presentation is particularly welcome. One small suggestion: in addition to listing further (i.e. new) activities in section 4, the report could recapitulate topics discussed in section 2 on which follow-up with Govt. is required.

2. On substance, item (ii) of section 2.3 (construction of improved stores) may deserve to be brought to the attention of EAPID. Scope for Bank assistance is specifically mentioned. On further expansion of geothermal power (item (vi) of same section): to what extent is this compatible with the intention to promote reliance on Uganda power once Turkwell is completed (if not before)?

  
R. Güsten

cc. Messrs. Wyss, ~~Bharier~~, Nouvel

May 12, 1983



## OFFICE MEMORANDUM

TO : Mr. J. Bharier, Chief, EGYEA

DATE: May 23, 1983

FROM : J. F. Bauer, Acting Chief, EGYD2

SUBJECT: KENYA - Status Report on Energy Assessment Follow-up  
Comments

This type of report is very helpful and we hope that it will be updated periodically. Some brief comments are given below (by number of sections):

2.1 (vi) We agree that MOE's role within Government is not yet strong and well defined enough and that is necessary to further strengthen MOE. Within the context of the petroleum and geothermal projects we are trying to achieve progress in institution building, which of course will remain a continuing effort.

2.3 (v) The most important stumbling block right now in the stalemate between GOK and interested oil companies is the following: the oil companies need to import foreign exchange and use it to finance exploration as they see fit without obtaining prior approval by the Central Bank etc. Unless they get such an agreement (which is reasonable) they may not show interest in exploration in Kenya (anyway not the hottest prospect in today's oil market) since it may result in delays of operations and excessive costs. This problem is related to 2.1(vi). The situation will be reviewed in the Supervision Report of a mission that just returned from Kenya.

2.3 (vi) Situation updated in Revised Project Brief.

### 3. OTHER AGENCIES

There is quite a bit of activity by UNDP and bilateral donors (Japan, UK, US, Italy) in geothermal, which is summarized in the Project Brief.

cc: Messrs. Chamot and Soto (EGYD2)

WBertelsmeier:as 

FORM NO. 75  
(9-78)

THE WORLD BANK

ROUTING SLIP		DATE: 05/19/83
NAME		ROOM NO.
Mr. Julian Bharier		D-451
cc: Messrs. Bronfman		A-1042
Anderson		A-1010
Venkataraman/ Segura (o/r)		K-900
APPROPRIATE DISPOSITION	NOTE AND RETURN	
APPROVAL	NOTE AND SEND ON	
CLEARANCE	PER OUR CONVERSATION	
COMMENT	PER YOUR REQUEST	
FOR ACTION	PREPARE REPLY	
INFORMATION	RECOMMENDATION	
INITIAL	SIGNATURE	
NOTE AND FILE	URGENT	
REMARKS: Please find attached comments from our Division on the Kenya - Status Report on Energy Assessment Follow-up.		
FROM: Isaac K. Sam <i>IKS</i>	ROOM NO.: K-903	EXTENSION: 48095



## OFFICE MEMORANDUM

DATE May 17, 1983

TO Mr. Isaac K. Sam, Acting Chief, INDD2

FROM Rakesh Bhan, INDD2 *R. Bhan.*

EXTENSION 48101

SUBJECT KENYA - Status Report on Energy Assessment Follow-up

1. I have reviewed the above report (No. 4483-KE, April 1983) and have the following comments:

A. Petroleum Product Specifications

2. In reviewing the overall energy situation of a country, especially one like Kenya which spends over 57% of its export earnings on energy imports, it is crucial to analyze the product specifications of petroleum products to determine the effective utilization of these scarce resources. It should have been addressed in the above-mentioned report. This issue was addressed in detail in the EAOR Refinery Engineering and Industrial Energy Efficiency Project Issues Paper dated October 25, 1982, prepared by the Industry Department. Kenyan product specifications reflect standards prevailing at the time of independence, which were modelled on specifications suited to the European environment. These are inappropriate for Kenya and result in an annual economic loss of about US\$16 million per year; further they would result in increasing the investment cost of any additional secondary conversion by about US\$12 - 14 million. Based on the recommendations of the Bank mission, a few product specifications were revised, but not to the extent recommended by the Bank mission. Annex 1 shows the old specifications, the new specifications and Bank mission recommendations. This issue should be addressed by the Joint UNDP/World Bank Energy Sector Management Program.

B. Industrial Energy Conservation

3. The report states that in view of the delay in processing the Refinery Engineering and Industrial Energy Efficiency Project, GOK has asked for assistance with industrial energy conservation under the ESMP facility (para 2.2 (ix)). Under the proposed EAOR Refinery Engineering and Industrial Energy Efficiency Project, a total of US\$0.8 million (excluding contingencies) has been earmarked for providing technical assistance to the Ministry of Energy (Decision Memorandum dated February 4, 1983). This includes US\$0.3 million for conducting petroleum pricing and regulatory policies studies, US\$0.4 million for energy audits and US\$0.1 million for training of staff of the Industrial Development Bank of Kenya (IDB).

4. Although, the progress of the project has been slow in the past, based on our discussions with Mr. Ligale, Permanent Secretary, Ministry of Energy, in Washington on May 3, 1983, we understand that the Government at

## KENYA - PETROLEUM PRODUCT SPECIFICATIONS

	<u>Old Specification</u>	<u>New Specification</u>	<u>Bank Mission Recommendation</u>
<b>1. <u>Illuminating Kerosene</u></b>			
(a) Sulfur content (max. weight %)	0.15	0.25	0.25
<b>2. <u>Automotive Gas Oil</u></b>			
(a) Cetane Index (calculated) minimum	52	50	45
(b) Flash Point (°F) (Pensky-Martens method)	166	150	100
(c) Final Boiling Point (FBP), °C maximum	385	400	400
<b>3. <u>Fuel Oil</u></b>			
(a) Kinematic Viscosity at 50°C, centistokes maximum	125	180	180

Conversion from old specifications to Bank mission recommendation would result in annual savings of about US\$16 million. Further, it would reduce investment cost of secondary conversion facility by about US\$12-14 million.

Industry Department  
May 1983



May 17, 1983

- 2 -

Mr. Isaac K. Sam

the highest level has now assigned a high priority to this project and is determined on its timely implementation. Arthur D. Little (ADL) of Boston who had earlier done studies for the Ministry of Energy have been retained to do further work. This additional work, which is directed towards answering some of the questions that the private oil company shareholders have raised, is expected to be completed by June end and the Government will be in a position to proceed ahead with the project by August 1983. Mr. Ligale also informed us that discussions between the President of Kenya and the oil companies had been held recently and on the basis of the importance that the project has assumed, he felt that it was unlikely that there would be any further delays.

5. In addition, the technical assistance component is interlinked with the refinery studies and its quality could suffer if separated from the refinery studies. Energy audit studies cannot be done completely independently of the refinery energy conservation and product yield improvement studies. Fuel oil specifications will determine the product yield pattern. If fuel oil specifications are relaxed in order to increase production of kerosene and gas oil, it may be necessary to invest in heating coils for fuel oil transportation trucks and storage tanks in the consuming factories. These investments would have to be accounted for in determining the optimum product mix and secondary conversion option. Delinking the technical assistance portion from the overall project will result in unnecessary wastage of scarce resources as a significant portion of the work would have to be repeated at the time of the refinery engineering and industrial energy efficiency project. We therefore strongly recommend that the technical assistance component be retained as part of the EAOR Refinery Engineering and Industrial Energy Efficiency Project which is expected for Board Presentation in November 1983.

cc: Messrs. Segura (o/r), Venkataraman

What about other industries?



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TO:

DAVID CRAIG, DEPARTMENT OF MINERALS AND ENERGY. RE YOUR TELEX OF MAY 23 PLEASED TO INFORM YOU THAT MESSRS. PRASAD AND AHMED PROPOSE TO ARRIVE IN PORT MORESBY ON JUNE 6 FOR ONE WEEK. SUGGEST INITIAL MEETING ON JUNE 7 WITH DEPARTMENT OF MINERALS AND ENERGY AT WHICH YOU COULD BRIEF MISSION ON STATUS ON IMPLEMENTATION OF ASSESSMENT RECOMMENDATIONS AND DISCUSSION PROPOSALS FOR POSSIBLE TECHNICAL ASSISTANCE TO BE PROVIDED UNDER JOINT BANK UNDP ENERGY SECTOR MANAGEMENT PROGRAM. REGARDS, JULIAN BHARIER, ENERGY DEPARTMENT. WORLD BANK.

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CLASS OF SERVICE:

FR/TELEX

TELEX NO.:

WABPRO NEB211

DATE: 5-31-83

SUBJECT:

MISSION TO PNG

DRAFTED BY:

Mahmed:cra

CLEARANCES AND COPY DISTRIBUTION:

AUTHORIZED BY (Name and Signature):

Mahmed Ahmed

DEPARTMENT:

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ENERGY



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23/5/83

RECEIVED

1983 MAY 23 AM 8:35  
COMMUNICATIONS DIVISIONFile MET  
ESMP  
PNG

ATTENTION: DR JULIAN BHARIER  
 CHIEF, ENERGY ASSESSMENTS DIVISION.

RE: PROPOSED VISIT OF MESSRS PRASAD AND AHMED IN LAST WEEK OF  
 MAY (REF. YOUR TELEX OF 13 APRIL 1983).

PLEASE ADVISE DATES AND ANY SUGGESTIONS FOR PROGRAMME.

REGARDS, DAVID CRAIG, *Dept. of Minerals + Energy*

FOR: N R AGONIA  
 SECRETARY FOR MINERALS AND ENERGY  
 PAPUA NEW GUINEA.

COPY TO DEPARTMENT OF FINANCE ATTENTION: MIKE ESSEX...

⊕

WORLDDBNK440098

WABPRO NE22211

REPLY VIA ITT

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TO:

DR. N.B. PRASAD, HYDERABAD, INDIA.

JAKARTA MISSION HAS BEEN DELAYED AT PROGRAMS REQUEST SO PLAN TO RETURN DIRECTLY FROM PORT MORESBY ON JUNE 11. TRADE WINGS HAVE BEEN ADVISED RE YOUR TICKET. I WILL ARRANGE EXPENSES. LOOK FORWARD TO SEEING YOU AT TRAVELDGE IN PORT MORESBY ON EVENING OF JUNE 6TH WHERE I ARRIVE FROM HONOLULU. REGARDS, MASOOD AHMED, ENERGY DEPARTMENT, WORLDBANK.

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TELEX NO.:

155 483 WELD IN

DATE:

5.27.83

SUBJECT:

DRAFTED BY:

MAhmed:jl

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AUTHORIZED BY (Name and Signature):

Julian Bharier, Chief, EGYEA

DEPARTMENT:

ENERGY

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MRS HAMILTON

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1983 MAY 27 PM 11: 14

CABLE SECTION

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FOR MR. MASOOD AHMED  
ENERGY DIVISION.

HAVE NOT +

HAVVVHAVE NOT RECEIVED YOUR TELEX OF MAY 17TH BUT PNG MISSION  
PROGRAMME STARTING JUNE 6TH WILL SUITE ME (.) WILL REACH PORT MORESBY  
JUNE 5TH OR 6TH WILL+ MORNING DEPENDING ON AIRLINE SCHEDULE (.)  
PLAN LEAVING PORT MORESBY SATURDAY THE JUNE 11TH AND REACHING JAKARTA  
JUNE 12TH AND LEAE JAKARTA 19TH OR 20TH (.) KINDLY CONFIRR PROPOSED  
DATES FOR JAKARTA SUITABLE (.) KINDLY ADVISE TRADD WINGS, YYDERRBAD,  
REGGGG+ REGARRING AIRR TICKET TO PPPNG ANDD INDONNSIA ....

QTB

QTB

QTB

Jakarta mission has been delayed at  
Programs request so plan to return  
directly from Port Moresby on  
June 11. Trade Wings have been  
advised re yr ticket. I will  
arrange expenses. Look forward to  
seeing you at Travelodge in Port Moresby  
on evening of June 6<sup>th</sup> where I arrive from Hanoi.  
Reford  
A-L

cc: Rex

on evening of

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TO: INTBAFRAD, NAIROBI, KENYA. FOR BAIG.

MANY THANKS YOUR TELEX 1927. IN VIEW OF REVISED OFFICE HOURS,  
NEWCOMBE WILL EXTEND HIS STAY TO MONDAY. PLEASE ARRANGE MEETINGS  
AS APPROPRIATE. THANKS, JULIAN BHARIER, CHIEF, ENERGY ASSESSMENTS  
DIVISION, ENERGY DEPARTMENT, WORLDBANK.

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CLASS OF SERVICE: **TELEX** TELEX NO.: **963-22022** DATE: **5.26.83**

SUBJECT: **Nairobi Mission** DRAFTED BY: **MAhmed:jl**

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**Julian Bharier, Chief, EGYEA**

DEPARTMENT: **ENERGY**  
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TO: HILTON HOTEL, ADDIS ABABA, ETHIOPIA.

FOR WORLD BANK GUEST EDDIE PERIES. HAVE RECEIVED FOLLOWING TELEX  
FROM NAIROBI RESIDENT OFFICE RE KEN'S PROPOSED MISSION. QUOTE  
RE YOUR TELEX MAY 25 ON VISIT TO NAIROBI BY NEWCOMBE. NOT  
POSSIBLE TO ARRANGE PROPOSED MEETINGS ALL IN ONE AFTERNOON.  
GOVERNMENT DOES NOT WORK ON SATURDAY ANY MORE. IT WOULD MAKE MORE  
SENSE IF NEWCOMBE WAS HERE TWO FULL WORKING DAYS. PLEASE ADVISE.  
REGARDS BAIG UNQUOTE. IN RESPONSE HAVE INDICATED TO THEM THAT  
KEN WILL BE ABLE TO EXTEND HIS STAY TO MONDAY. REGARDS, MASOOD  
AHMED, ENERGY DEPARTMENT, WORLDBANK.

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CLASS OF SERVICE: <b>TELEX</b>		TELEX NO.: <b>21104</b>	DATE: <b>5.26.83</b>
SUBJECT: <b>Nairobi Mission</b>		DRAFTED BY: <b>Mahmed:jl</b>	
CLEARANCES AND COPY DISTRIBUTION:		AUTHORIZED BY (Name and Signature): <b>Julian Bharier, Chief, EGYEA</b>	
		DEPARTMENT: <b>ENERGY</b>	
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INTBAFRAD NAIROBI

MAY 26, 1983

188000

*J.C.*  
*Alman*

1927 FOR JULIAN BHARIER

RE YOUR TELEX MAY 25 ON VISIT TO NAIROBI BY NEWCOMBE. NOT  
POSSIBLE TO ARRANGE PROPOSED MEETINGS ALL IN ONE AFTERNOON.  
GOVERNMENT DOES NOT WORK ON SATURDAY ANY MORE. IT WOULD MAKE MORE  
SENSE IF NEWCOMBE WAS HERE TWO FULL WORKING DAYS. PLEASE ADVISE.  
REGARDS BAIG.



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TO:

INTBAFRAD COLOMBO, SRI LANKA. PLEASE PASS ON THE FOLLOWING TO MR. M. MUNASINGHE AND COPY IT TO MESSRS. WEERAKOON (EXTERNAL RESOURCES), PERERA (MINISTRY OF ENERGY) AND KIM (UNDP). QUOTE FURTHER TO OUR CONVERSATION IN WASHINGTON, I AM PLEASED TO CONFIRM THAT MR. ANSARI AND I PROPOSE TO ARRIVE IN COLOMBO ON JUNE 12. AS I INDICATED, THE PURPOSE OF THE MISSION WOULD BE TWOFOLD. FIRST TO PREPARE A BRIEF REPORT ON THE STATUS OF IMPLEMENTATION OF THE VARIOUS RECOMMENDATIONS MADE IN THE ENERGY ASSESSMENT REPORT OF MAY 1982. AND SECOND, TO IDENTIFY WHETHER SOME OF THE TECHNICAL ASSISTANCE NEEDED TO IMPLEMENT THESE RECOMMENDATIONS COULD BE PROVIDED THROUGH THE JOINT BANK/ UNDP ENERGY SECTOR MANAGEMENT PROGRAM WHICH IS NOW OPERATIONAL. I WOULD STAY IN COLOMBO UNTIL JUNE 15 TO INTRODUCE MR. ANSARI TO THE VARIOUS AGENCIES INVOLVED AND TO WORK WITH YOU ON IDENTIFYING POTENTIAL ENERGY SECTOR MANAGEMENT PROGRAM ASSISTANCE. ANSARI WOULD STAY ON FOR AN EXTRA WEEK TO GATHER ALL THE INFORMATION FOR THE PREPARATION OF THE STATUS REPORT. LOOK FORWARD TO SEEING YOU AND TRUST THAT PROPOSED MISSION TIMING IS CONVENIENT. REGARDS, MASOOD AHMED, ENERGY DEPARTMENT.

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CLASS OF SERVICE: FR/TELEX

TELEX NO.: 954-21410

DATE: 5/26/83

SUBJECT: MISSION TO SRI LANKA-ESMP

DRAFTED BY: MAHmed:cra

CLEARANCES AND COPY DISTRIBUTION:  
CC & Cleared w/ in substance:  
Mr. F. Ahmed

AUTHORIZED BY (Name and Signature):  
Julian Bharier

DEPARTMENT: ENERGY

CC: Mr. Ansari

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**TO:** INTBAFRAD NEW DELHI, FOR MR. JEAN-DAVID ROULET. WE HAVE BEEN UNABLE TO REACH DR. N.B. PRASAD BY TELEX NOR TELEPHONE TO ADVISE HIM OF MISSION TO PNG. WOULD YOU PLEASE CONTACT DR. PRASAD AT TELEPHONE NUMBER 842-3315 IN HYDERABAD AND ADVISE HIM TO CALL ME TOMORROW AT 10 O'CLOCK WASHINGTON TIME. YOUR ASSISTANCE IN THIS MATTER WOULD BE VERY MUCH APPRECIATED. MASOOD AHMED, ENERGY DEPARTMENT, WORLD BANK.

END OF TEXT

NOT TO BE TRANSMITTED

<b>CLASS OF SERVICE:</b> FR/TELEX		<b>TELEX NO.:</b> 953-313150	<b>DATE:</b> 5/25/83
<b>SUBJECT:</b> MISSION TO PNG < PRASAD		<b>DRAFTED BY:</b> MAhmed:cra	
<b>CLEARANCES AND COPY DISTRIBUTION:</b>		<b>AUTHORIZED BY (Name and Signature):</b> Mr. Julian Bharier	
		<b>DEPARTMENT:</b> ENERGY	
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PAGE 1 OF 1 EXTENSION 74545 MESSAGE NUMBER TEST NUMBER (FOR CASHIER'S USE ONLY)

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START HERE → TO: DR. N. B. PRASAD, HYDERABAD, INDIA. RE MISSION TO PAPUA NEW GUINEA. WE HAVE NOT RECEIVED ANY RESPONSE ON THE TELEXES SENT TO YOU ON MAY 17 AND 23. PLEASE CALL ME TOMORROW AT 10 O'CLOCK WASHINGTON TIME. REGARDS, MASOOD AHMED, ENERGY DEPARTMENT.

NOT TO BE TRANSMITTED

CLASS OF SERVICE: **FR/TELEX** TELEX NO.: **0155-483** DATE: **5/25/83**

SUBJECT: **MISSION TO PNG** DRAFTED BY: **MAhmed:cra**

CLEARANCES AND COPY DISTRIBUTION: AUTHORIZED BY (Name and Signature): *Julian Bharier*

DEPARTMENT: **ENERGY**

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TO:

INTBAFRAD, NAIROBI. FOR LOOS/DEWAR. RE ENERGY ASSESSMENT FOLLOW UP. AS KEN NEWCOMBE DISCUSSED WITH YOU DURING HIS APRIL MISSION, UNDER THE JOINT UNDP/BANK ENERGY SECTOR MANAGEMENT PROGRAM WE COULD ASSIST GOK IN PREPARING AND IMPLEMENTING A SOLAR WATER HEATING PROJECT, WHICH WAS IDENTIFIED AS A HIGH PRIORITY IN THE ASSESSMENT REPORT. TO OBTAIN SOME ADDITIONAL INFORMATION ON THIS PROJECT, WE PROPOSE THAT NEWCOMBE, WHO IS CURRENTLY IN ETHIOPIA, VISIT NAIROBI ON JUNE 3 AND 4. DURING HIS STAY HE WOULD LIKE TO MEET WITH MESSRS. NJOIKE AND LIGAZE OF KEMARA, ENERGY DEPARTMENT, GECAU OF EAPL AND MASAKHALIA OF ECONOMIC PLANNING. ALSO WILSON OF CANADIAN EMBASSY RE CIDA STUDY OF SOLAR WATER HEATING WHICH WAS EXPECTED IN MAY. GRATEFUL IF YOU COULD ASCERTAIN WHETHER PROPOSED MISSION IS CONVENIENT FOR THE GOVERNMENT AGENCIES INVOLVED. WOULD ALSO APPRECIATE YOUR HELP IN ARRANGING HIS MEETINGS GIVEN SHORT STAY. HE PROPOSES TO ARRIVE FROM ADDIS AT 11 AM ON FRIDAY MORNING AND COULD STAY ON TO MONDAY IF SCHEDULE SO REQUIRES. THANKS AND REGARDS, JULIAN BHARIER, ENERGY DEPARTMENT.

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CLASS OF SERVICE: **FR7TELEX**

TELEX NO.: **963-22022**

DATE: **5/24/83**

SUBJECT:

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TO:

HILTON HOTEL ADDIS ABABA. FOR WORLD BANK  
 GUEST EDDIE PERIAS. PLEASE PASS FOLLOWING MESSAGE ON TO KEN.  
 (AAA) HAVE INFORMED NAIROBI RESIDENT MISSION OF YOUR PROPOSED  
 ARRIVAL AND ASKED THEM TO OBTAIN GOVERNMENT CLEARANCE AND TO SET  
 UP THE MEETINGS YOU INDICATED. HAVE TOLD THEM THAT IF NECESSARY  
 YOU WOULD EXTEND YOUR STAY TO MONDAY. (BBB) THERE HAS BEEN NO  
 FURTHER PROGRESS ON HOW TO PROCEED WITH INDUSTRIAL CONSERVATION  
 PROJECT. SUGGEST YOU LEAVE THIS OUT IN YOUR DISCUSSIONS ON  
 POTENTIAL ESMP ASSISTANCE. BUT IT WOULD BE USEFUL IF YOU COULD  
 GET ANY ADDITIONAL INFORMATION ON WHETHER PRE-FEASIBILITY WORK ON  
 COAL IMPORT AND HANDLING IS REQUIRED OR NOT. YOU REMEMBER THAT  
 IND'S VIEWS WAS THAT THIS ASPECT OF CONSERVATION/SUBSTITUTION  
 EFFORT DID NOT REQUIRE ANY FURTHER STUDY. (CCC) RE YOUR QUERY ON  
 QUOTE POSSIBLE UNQUOTE. YOU CAN MAKE A COMMITMENT ON ESMP  
 ASSISTANCE SUBJECT TO USUAL CAVEATS REGARDING FIRST, REVIEW OF  
 TECHNICAL AND ECONOMIC VIABILITY AT HEADQUARTERS FOLLOWING YOUR  
 RETURN, AND SECOND, SATISFACTORILY ENSURING THAT PROPOSED PROJECT  
 WOULD NOT DUPLICATE/OVERLAP WITH ONGOING OR PLANNED ACTIVITIES OF  
 OTHER AGENCIES. (DDD) HOPE ETHIOPIA MISSION PROGRESSING WELL.  
 REGARDS, MASOOD AHMED.

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NOT TO BE TRANSMITTED

CLASS OF SERVICE:

FR/TELEX

TELEX NO.:

21104

DATE:

5/24/83

SUBJECT:

NAIROBI MISSION

DRAFTED BY:

Mahmed:cra

CLEARANCES AND COPY DISTRIBUTION:

AUTHORIZED BY (Name and Signature):

Julian Bharier

DEPARTMENT:

ENERGY

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Distribution; fca  
Mr. ~~XXX~~ Bharier  
Mr. De Jong

I B R D ADDIS

MAY 25, 1983

231 MASOOD AHMED, ENERGY DEPARTMENT. EGYEA

PLEASE ARRANGE MEETINGS WITH NJOIKE AND LIGAZE OR KEMARA, ENERGY DEPT, GECAU, GM OF EAPL AND MASAKHALIA OF ECONOMIC PLANNING AND DEVP. ALSO WILSON OF CANADIAN EMBASSY RE CIDA SHWS STUDY RESULTS HOPEFULLY AVAILABLE BY TIME OF MY ARRIVAL. FLIGHTS ARE AWKWARDLY TIMED. EYE CAN ARRIVE AT 11AM FRIDAY FOR MEETINGS FRIDAY AFTERNOON AND SATURDAY MORNING JUNE 3 AND 4. IF NOT ENOUGH TIME COULD STAY UNTIL MONDAY BUT OBVIOUSLY NOT PREFERRED. PLEASE ADVISE STATUS OF CONSERVATION PROPOSAL RE IND AND US. PLEASE REPLY TO ME CARE OF EDDIE PERIES AT HILTON. EYE WILL BE OUT UNTIL FRIDAY AFTERNOON. PLEASE DEFINE USE OF TERM POSSIBLE RE SOLAR PROJECT. AM EYE STILL UNABLE TO MAKE COMMITMENT OF ASSISTANCE DEPENDING OF COURSE ON OUR ONGOING REVIEW OF PRACTICALITY AND ECONOMIC VIABILITY. REGARDS  
NEWCOMBE



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TO:

HILTON HOTEL, ADDIS ABABA FOR WORLD BANK  
 GUEST, KEN NEWCOMBE. (AAA) RE YOUR PROPOSED TRIP TO NAIROBI  
 PROGRAMS HAS CLEARED YOUR MISSION TO OBTAIN FURTHER INFORMATION  
 ON POSSIBLE SOLAR WATER HEATING PROJECT. PLEASE LET ME KNOW  
 EXACT DATE YOU PLAN TO BE IN NAIROBI AND WHO YOU WOULD NEED TO SEE  
 SO THAT I CAN ASK RESIDENT MISSION TO GET GOVERNMENT CLEARANCE AND  
 TO SET UP YOUR MEETINGS. (BBB) PROGRAMS FEEL THAT SOME MINOR  
 EDITORIAL CHANGES NEED TO BE MADE TO THE CURRENT DRAFT OF THE  
 COUNTRY STATUS REPORT BEFORE IT CAN BE HANDED OVER TO THE GOVERN-  
 MENT. THEREFORE DURING YOUR VISIT INFORM THE GOVERNMENT THAT A  
 DRAFT IS BEING FINALIZED FOR TRANSMISSION TO THEM. AWAITING YOUR  
 RESPONSE. REGARDS, MASOOD AHMED.

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CLASS OF SERVICE: FR/TELEX

TELEX NO.: 21104

DATE: 5/24/83

SUBJECT: MISSION TO NAIROBI

DRAFTED BY: MAHMED:cra

CLEARANCES AND COPY DISTRIBUTION:

AUTHORIZED BY (Name and Signature):  
Julian Bharier *Julian Bharier*

DEPARTMENT:

ENERGY

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TO: DR. PRASAD, HYDERABAD, INDIA. TRUST YOU RECEIVED MY TELEX OF MAY 17 INDICATING THAT PROPOSED MISSION TO PAPUA NEW GUINEA WOULD START ON JUNE 6 IN PORT MORESBY. PLEASE CONFIRM WHETHER THIS IS CONVENIENT FOR YOU. REGARDS, MASOOD AHMED, ENERGY DEPARTMENT.

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NOT TO BE TRANSMITTED

CLASS OF SERVICE: <b>FR/TELEX</b>		TELEX NO.: <b>0155-483</b>	DATE: <b>5/23/83</b>
SUBJECT: <b>MISSION TO PNG</b>		DRAFTED BY: <b>MAhmed:cra</b>	
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TO:

DR. PRASAD, HYDERABAD, INDIA. RE PROPOSED MISSION TO PNG/INDONESIA. I PROPOSE TO ARRIVE IN PORT MORESBY ON MONDAY, JUNE 6 AT SIX A.M. VIA AIR NEW GUINEA FLIGHT FROM HONGKONG. WE WOULD STAY IN PORT MORESBY UNTIL THE AFTERNOON OF SATURDAY JUNE 11, WHEREUPON I WOULD LEAVE FOR SRI LANKA AND YOU COULD CONTINUE TO JAKARTA FOR A WEEK. PLEASE CONFIRM IF THIS SCHEDULE IS CONVENIENT FOR YOU. REGARDS, MASOOD AHMED, ENERGY DEPARTMENT, WORLD BANK.

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CLASS OF SERVICE: FR/Telex

TELEX NO.: 0155-483

DATE: 5/17/83

SUBJECT: Mission to PNG/Indonesia

DRAFTED BY: MAhmed:cra  
AUTHORIZED BY (Name and Signature):

JULIAN BHARIER  
DEPARTMENT: ENERGY

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## OFFICE MEMORANDUM

TO: Files

DATE: May 13, 1983

FROM: Masood Ahmed SUBJECT: Meeting with Mr. R. Hudry, Alternate Executive Director (France)

1. At Mr. Hudry's request, Messrs. Rovani, Rao and myself met with him on May 11th to clarify certain questions he raised on the report, Energy Transition in the Developing Countries.

2. The three points discussed at the meeting were as follows:


- (i) the relationship between the figures/projections used in this report and those that had been presented in the previous policy paper, Energy in the Developing Countries (1980). We provided him with a table which set out the comparative figures for the two reports as regard energy consumption, production and investments and which outlined the effect of the different country classification criteria which had been used in the two papers.
- (ii) The Bank's petroleum lending policy. We discussed in some detail the rationale for Bank involvement in various types of petroleum projects and the relationship between Bank lending and other sources of finance for these projects. We also discussed how this policy had been applied in the case of certain specific projects recently approved by the Board. We agreed that Mr. Hudry would call Philippe Bourcier if he required further detailed information on specific petroleum operations.
- (iii) The Bank's recent energy lending in relation to the programs set out in the 1980 EDC report. We explained that the volume of energy lending since FY81 had been between the levels envisaged under the "current" and "desirable" lending programs of EDC. This was a reflection of the Board decision to limit energy lending to 25% of total Bank lending; the desirable program in EDC had in any event been based on the premise of obtaining new resources/mechanisms to expand Bank involvement in energy. However, Mr. Hudry did point out that the investment requirement estimates in the 1983 report exceeded the 1980 report estimates and that as the desirable lending program of EDC was based on those estimates, there was now an even stronger case for increasing the level of Bank energy lending.

cc: Messrs. Rovani, Rao, Bourcier  
Mrs. Ribe (o/r)



## OFFICE MEMORANDUM

TO: Mr. Julian Bharier, Chief, EGYEA DATE: May 12, 1983

FROM: Masood Ahmed 

SUBJECT: GAMBIA - Preliminary Discussions for a Proposed Energy Assessment

1. Further to our discussion in Washington and subsequent telephone conversations with the Government of Gambia and with yourself when I was in Dakar, I visited Banjul on May 6 to discuss a proposed energy assessment mission with Gambian officials.

2. In Banjul I met with Mr. Njie the Permanent Secretary in the Ministry of Economic Planning and Industrial Development, which is the principal Government authority responsible for energy sector policy and coordination. I explained to him the objectives, scope and rationale for the proposed energy assessment and outlined the overall Energy Assessment and Sector Management activities of the Bank and UNDP. We agreed that in the case of the Gambia considerable information and analysis of the energy sector had already been carried out (through the UNSO financed Energy Master Plan Study; through the Bank's energy technical assistance project; and through the ongoing activities of a number of other assistance agencies).

3. Mr. Njie indicated that he would like to ensure that the proposed assessment took advantage of this existing information. I pointed out that the approach we proposed to adopt would take account of this. In our view, the principal objective of the assessment would be to draw upon a large quantity of available data and information to prepare a short action oriented report which could be used as a framework for technical and financial assistance by the Government and external donor agencies. Therefore, we had already prepared a draft energy assessment report based on existing information and the proposed mission would basically update this report, check its accuracy through discussions with relevant officials and fill in the gaps in the two areas where our existing information base was weak. These areas are the institutional framework for sector management and coordination and the potential for improving the efficiency of energy use in both the industrial and commercial/residential sectors. Mr. Njie agreed strongly with this approach and expressed a hope that the final assessment report would be available to the Government before the end of the year so that it could be used as a basis for the next donor's meeting.

4. I handed over to him two copies of the draft energy assessment desk study that had been prepared on the understanding that this was still being reviewed within the Bank and that the proposed mission would check its accuracy/completeness in the field before finalizing it in blue cover. We tentatively agreed that such a mission should visit Banjul for about 10 days in early July 1983. I also agreed to let him know of the mission's composition and precise timing by early June.

cc: Messrs. Palien, Bouhaouala, Thiam (WAP); Rao, Bauer, Wackman (EGY)  
Ms. Ono (WA2)



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TO:

UNDEVPRO BANJUL FOR DEMEKSA. RE YOUR TELEX

OF MAY 11. **AMHED**'s MISSION WAS CONFIRMED BY THE GOVERNMENT ON MAY 3 AND HE VISITED BANJUL FOR MORNING OF MAY 6 TO MEET WITH MR. NJIE, PERMANENT SECRETARY IN THE MINISTRY OF ECONOMIC PLANNING. REGRET THAT HE WAS UNABLE TO MEET WITH YOU BECAUSE OF LOGISTICAL PROBLEMS INVOLVING FERRY CONNECTION TO RETURN TO DAKAR AND CATCH A TIGHT CONNECTION FOR WASHINGTON. I APOLOGIZE FOR ANY INCONVENIENCE THIS MAY HAVE CAUSED TO YOU. I AM SENDING YOU TODAY A COPY OF HIS BACK TO OFFICE REPORT SUMMARIZING HIS DISCUSSIONS WITH MR. NJIE. WE WILL OF COURSE **KEEP** YOU FULLY INFORMED OF FUTURE DEVELOPMENTS AND MISSIONS IN THE CONTEXT OF PREPARING THE ENERGY ASSESSMENT FOR THE GAMBIA. REGARDS, BHARIER.

END OF TEXT

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CLASS OF SERVICE: <b>FR/Telex</b>	TELEX NO.: <b>2223</b>	DATE: <b>5/22/83</b>
SUBJECT: <b>DISCUSSIONS IN GAMBIA</b>	DRAFTED BY: <b>MAhmed:cra</b>	
CLEARANCES AND COPY DISTRIBUTION: <b>CC: Mr. Palein</b>	AUTHORIZED BY (Name and Signature): <b>MAhmed</b> 	
	DEPARTMENT: <b>ENERGY</b>	
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Distribution:

Mr. Bharier

Mr. Palein

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WASHINGTON

MISC398 BHARIER, ENERGY ASSESSMENT AND MANAGEMENT DIVISION.  
RE AHMED'S VISIT 5-6 MAY UR TELEX OF 29 APRIL RECEIVED 3 MAY.  
AHMED HAS NEITHER CALLED NOR VISITED US. PLEASE ADVISE IF STILL  
PLANNING TO COME TO BANJUL

DEMEKSA UNDEVPRO BANJUL

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TO:

HILTON HOTEL, ADDIS ABABA, ETHIOPIA. FOR  
 WORLD BANK GUEST, AKIN ODOULOWU. (AAA) AMOAKO HAS INFORMED US  
 THAT BOTH NATIONAL ENERGY COUNCIL AND MINISTRY OF POWER HAVE  
 APPROVED YOUR VISIT TO ZAMBIA IN LAST WEEK MAY TO DISCUSS FOLLOW  
 UP TECHNICAL ASSISTANCE IN THE ENERGY SECTOR. CONSEQUENTLY,  
 PROPOSE THAT YOU PROCEED DIRECTLY TO LUSAKA AT THE END OF YOUR  
 MISSION IN ETHIOPIA. THE PRINCIPAL OBJECTIVE OF YOUR VISIT SHOULD  
 BE TO DEFINE IN DETAIL, WITH THE RELEVANT GOK OFFICIALS, THE  
 COMPONENTS THAT COULD BE INCLUDED IN A POSSIBLE TECHNICAL ASSIS-  
 TANCE PACKAGE. IN PARTICULAR YOU SHOULD DEFINE THE ACTIVITIES  
 THAT WOULD BE PROVIDED UNDER THE TWO BROAD HEADINGS OF INSTITUTION-  
 AL STRENGTHENING OF NATIONAL ENERGY COUNCIL AND FOR ESTABLISHING  
 AN EFFECTIVE NATIONAL ENERGY EFFICIENCY IMPROVEMENT PROGRAM. YOU  
 SHOULD ALSO DEVELOP PRELIMINARY ESTIMATES OF COSTS AND SCHEDULES  
 FOR THESE ACTIVITIES. (BBB) NOTE THAT ESMP CONTRIBUTION TO THIS  
 PROGRAM IS UNLIKELY TO EXCEED 100,000 DOLLARS. THEREFORE, EVEN  
 WITH ADDITIONAL 85,000 DOLLARS FROM UNDP IPF IT IS POSSIBLE THAT  
 A PHASED OR PARTIAL APPROACH MAY BE REQUIRED AT THIS STAGE, UNLESS  
 ADDITIONAL FUNDS FROM OTHER SOURCES CAN BE MOBILIZED. THUS IN  
 DEVELOPING AN OVERALL TECHNICAL ASSISTANCE PACKAGE, YOU SHOULD

/c

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CLASS OF SERVICE: <b>FR/TELEX</b>		TELEX NO.: <b>21104</b>	DATE: <b>5/12/83</b>
SUBJECT: <b>MISSION TO LUSAKA</b>		DRAFTED BY: <b>MAhmed:cra</b>	
CLEARANCES AND COPY DISTRIBUTION:		AUTHORIZED BY (Name and Signature): <b>Masood Ahmed</b>	
		DEPARTMENT: <b>ENERGY</b>	
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TO:

ASCERTAIN WHETHER IT CAN BE SUBDIVIDED AND WHICH COMPONENTS WOULD HAVE THE PRIORITY FOR THE ESMP. IT IS ALSO IMPORTANT THAT WE MAKE IT CLEAR TO GOK OFFICIALS THAT THE PACKAGE BEING DEVELOPED WOULD NEED TO BE REVIEWED AT HEADQUARTERS AND THAT FUNDING FOR ALL COMPONENTS IS BY NO MEANS ASSURED. (CCC) DURING THE MISSION YOU SHOULD ALSO OBTAIN AVAILABLE INFORMATION ON THE STATUS OF IMPLEMENTATION FOR THE ASSESSMENT REPORTS MAIN RECOMMENDATIONS. THIS INFORMATION WILL BE USED FOR THE EVENTUAL PREPARATION OF A COUNTRY STATUS REPORT FOR ZAMBIA, AS PART OF THE OVERALL PROCESS OF FOLLOW UP. (DDD) PLEASE MAKE SURE THAT YOU LIAISE CLOSELY WITH UNDP AND BANK REPRESENTATIVES IN LUSAKA. (EEE) PLEASE LET ME KNOW EXACT DATE OF YOUR ARRIVAL IN LUSAKA SO THAT I CAN INFORM AMOAKO AND GOK OFFICIALS AND ARRANGE FOR YOUR HOTEL. (FFF) HOPE ETHIOPIA MISSION IS PROGRESSING WELL. REGARDS, AHMED.

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CLASS OF SERVICE: **FR/Telex**

TELEX NO.: **21104**

DATE: **5/12/83**

SUBJECT:

DRAFTED BY:  
**MAhmed:cra**

CLEARANCES AND COPY DISTRIBUTION:

AUTHORIZED BY (Name and Signature):  
**Masood Ahmed**

DEPARTMENT:  
**ENERGY**

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TO:

INTBAFRAD LUSAKA. FOR AMOAKO (AAA) MANY  
THANKS FOR YOUR TELEX 190 TO MR. BHARIER, REGARDING PROPOSED  
~~PROPOSED~~ VISIT BY AKIN ODOULOWU TO FURTHER DEFINE TECHNICAL  
ASSISTANCE REQUIREMENTS IN THE ENERGY SECTOR. I WILL CONTACT  
YOU SHORTLY WITH EXACT DATE OF ODOULOWU'S ARRIVAL. (BBB) IN THE  
MEANTIME IT WOULD BE USEFUL IF YOU COULD ASK NATIONAL ENERGY  
COUNCIL OR MINISTRY POWER STAFF TO COMPILE AN UP TO DATE INVENTORY  
OF ONGOING AND PROPOSED TECHNICAL ASSISTANCE PROJECTS IN ENERGY  
BEING SUPPORTED BY VARIOUS BILATERAL MULTILATERAL DONORS. REGARDS,  
AHMED, ACTING CHIEF, ENERGY ASSESSMENTS DIVISION, ENERGY DEPARTMENT

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CLASS OF SERVICE: <b>FR/TELEX</b>		TELEX NO.: <b>INTBAFRAD 965-44530</b>	DATE: <b>5/12/83</b>
SUBJECT: <b>MISSION TO LUSAKA</b>		DRAFTED BY: <b>MAhmed:cra</b>	
CLEARANCES AND COPY DISTRIBUTION: <b>cc: P. Hansen(EAL)</b>		AUTHORIZED BY (Name and Signature): <b>Masood Ahmed</b>	
		DEPARTMENT: <b>Energy</b>	
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## OFFICE MEMORANDUM

TO: Distribution

DATE: May 11, 1983

FROM: Julian Bharier, Chief, EGYEA *JB*SUBJECT: KENYA - Status Report on Energy Assessment Follow-up

1. Attached please find a copy of the above report which outlines the progress made to date in implementing the major recommendations of the Energy Assessment Report of May 1982. The report also identifies those areas where further technical assistance will be required to evaluate Energy policy or investment options.

2. I would welcome your comments on this report which is one of the first of its type. This report was prepared under the Joint Bank/UNDP Energy Sector Management Program.

**Distribution:**

Kraske, Dunn, Anderson, Uluatam (EAl), Bronfman, Erkmen, Gusten, Ms. Marshall(EAP), Kohli, Segura, Ms. Haug (IND), Rovani, Rao, Bourcier, Sheehan, Sadcve, Fish, Dosik, Davis, Hughart, Bauer, McCarthy  
EGYEA Staff

MAhmed:ff





# Joint UNDP/World Bank Energy Sector Management Program

Activity Completion Report

No. 4483-KE

**DECLASSIFIED**

NOV 30 2022

**WBG ARCHIVES**

Country: KENYA

Activity: STATUS REPORT ON ENERGY ASSESSMENT FOLLOW UP

April 1983

**Report of the Joint UNDP/World Bank Energy Sector Management Program**

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## ABBREVIATIONS

AFC	Afro-Chemical Food Company, Kenya
CIDA	Canadian International Development Association
E/DI	Energy/Development International
EAP	East Africa Projects Divisions, World Bank
EAPC	East Africa Portland Cement Company
EAPL	East African Power and Light Company
EGY	Energy Department, World Bank
ESMP	Energy Sector Management Program, UNDP/World Bank
GOK	Government of Kenya
GTZ-SEP	German Agency for Technical Cooperation - Special Energy Project
ICS	Improved Charcoal Stove
IFC	International Finance Corporation
IND	Industry Department, World Bank
ITDG	Intermediate Technology Development Group
IWS	Improved Wood Stove
KCFC	Kenya Chemical and Food Corporation
MEPD	Ministry of Economic Planning and Development
MOE	Ministry of Energy, Kenya
TA	Technical Assistance



KENYA ENERGY ASSESSMENT  
Status Report on Follow-up

1. BACKGROUND

1.1 The Kenya energy assessment mission of March 1981 produced a draft report which was reviewed with the Government in March 1982; the final report was issued in May 1982. Some of the findings of the report were used in determining the agreement for the second SAL of June 1982 which included an undertaking by GOK to furnish the Bank with a comprehensive energy investment program providing for both production and conservation sector wide. This document was sent for review by the Bank in March 1983, as agreed.

1.2 Economic conditions have deteriorated in Kenya since the 1981 energy assessment mission. Whereas net energy imports cost 36% of export earnings in 1980, by 1982 this figure had become 57%. GDP growth, reported at 3.8% in 1980, had fallen to about 3% in 1982 with little sign of improvement in 1983/84. Foreign exchange reserves have been drawn down consistently since 1980 to the point now where even the energy sector investment and aid, which is essential to retard the worsening balance of payments situation, is unable to be fully utilised due to severe stringencies on government expenditure limiting effective counterpart contribution. Continued disagreement between government and oil companies over refinery management and investment is further aggravating the impact of imported energy on economic development. In this situation relatively untrammelled assistance to the private sector and successful parastatals to implement fuel saving measures is vital, along with skilled advice to the government on policy measures.

2. RECOMMENDATIONS AND RESPONSES

2.1 POLICY ADVICE OFFERED

GOVERNMENT AND BANK GROUP RESPONSE

- |   |  |
|---|--|
| (i) Divert long haul freight to the railway on the Mombasa-Nairobi route as a matter of urgency. Savings of 12 million litres of diesel are forecast. | (i) GOK accepts this as a high priority policy objective but is unable to implement the transfer due mostly to continuing unreliability of operations by rail the main cause of which is lack of spare parts related in turn to limited foreign exchange availability. While containerisation of the rail cargo handling system proceeds it lags behind road transportation in quality and efficiency further reducing the competitive position of rail. |
| (ii) Do not implement the small diesel bus "Matatas" program on a large scale unless economic viability is well established.                          | (ii) The matatas fleet appears to have grown rapidly since the time of the assessment mission though without either government support or hindrance. Fares are maintained by owner/operators at 1 Ksh below the public bus system. There is no government  |

price control on matatas. This transport mode is more flexible and convenient for commuters. The fact that it is all diesel powered is recognised by GOE as undesirable and is being tackled indirectly as described in 2.1(v) below.

- (iii) Review the import duty on coal to ensure that it will not act as a deterrent to the economic substitution of fuel oil. Import duty was 30% of cif value in 1981. This recommendation was assigned high priority.
- (iii) In the 1981 budget speech the Ministry of Finance announced a reduction of duty of 10%, from 30% to 20% of cif price, indicating that further reductions, perhaps to the elimination of duty, may be later implemented. Since then across the board increases in duty have lessened the impact of this reduction. Currently import duty computes at 22.2% (US\$64.6 cif ex Maputo c.f. US\$14.36 duty per tonne).
- (iv) Reduce the differential between normal and off peak power tariffs to better reflect economic costs and benefits.
- (iv) New tariffs raise the ROR to 5% instead of the 8% agreed as a covenant to Bank lending. MOE stated that they attach little significance to this tariff measure having no firm view that it should be retained or removed. One reason EAPL has retained the facility is in deference to the 19000 householders with interruptable supply to whom the off-peak rate applies. This is an increasingly small proportion of electric hot water users. It is recognized by MOE that this domestic off-peak tariff will have to be reviewed as part of the solar water heating investment project.
- (v) Realign sales taxes on petroleum fuels to bring premium gasoline and automotive distillate prices close together and hence to reduce the distortion in demand for diesel in relation to refinery production. This recommendation was assigned high priority.
- (v) MOE indicated that the government's hesitance in reducing this differential was due to the financial impact on agriculture and manufacturing sectors, both heavily reliant on diesel. There is minimal data to quantify this impact hence to assess its real significance. As an alternative MOE has proposed a large increase in import duties for diesel vehicles. This paper is now with the Treasury which has authority to implement the measure without going to Cabinet. MOE expressed confidence that this measure would soon be adopted.



(vi) Place all energy related programs under the Ministry of Energy and strengthen its structure and staffing.

(vi) The MOE has grown substantially since 1981 and has placed expatriate advisors from E/DI in line positions. The German GTZ-SEP (Special energy project) have provided staff in an advisory role to the Ministry through not as departmental staff. The authority of the MOE is clearly related to its status within government. It is obviously subservient to the Ministries of Finance and Economic Planning and Development. MOE has greater capability to plan and establish investment programs for the sector than at the time of the assessment. However there remains serious disaggregation of responsibility and planning for woodfuels and for agroforestry with an obvious woodfuel component. It is not apparent that MOE is aware of the many initiatives being struck in this field in Kenya. It has limited influential coordinating responsibility to plan for, and to rationalize, activity in this sub-sector for some portion of which it is involved in both planning and implementation. Other ministries and agencies known to be involved are the Ministries of Environment and National Resources, Agriculture, Livestock, the Office of the President, and the womens organization Mandeleo Ya Wanake.

(vii) The mission supported the merger of Kenya Power Company and the Tana River Development Company so as to reduce overheads and improve efficiency in this sub-sector.

(vii) This merger remains Government policy and has been pursued more actively in recent months. MOE suggests that the unification of operations is almost effective and only the dual top management structure remains. MOE officials believe the official merger will occur quite soon.

## 2.2 STUDIES AND TECHNICAL ASSISTANCE PROPOSED

(i) Complete pre-investment studies for the Turkwell hydropower project as soon as possible and examine the longer term interconnection with supply sources in Uganda and Tanzania as a matter of priority.

## GOVERNMENT AND BANK GROUP RESPONSE

(i) EAP power staff will offer as part of upcoming Kiambere project loan negotiations technical assistance to devise the least cost development plan, considering also interconnection with neighbouring country supply systems. It should be noted that senior MEPD staff independantly raised the question of Bank assistance in establishing the potential for interconnection about which prospect they were most enthusiastic.

- (ii) Large-scale substitution of electric with solar water heating in households and industry appears economically attractive and hence a detailed program of large-scale installation should be developed as a matter of priority.
  - (iii) The expanded use of wind energy and biogas should be studied.
  - (iv) The potential to achieve energy self-sufficiency for all sugar mills and to generate surplus bagasse energy for sale should be studied.
  - (v) Urgently review the entire ethanol program in order to rationalize and monitor production and end-use, focussing in the short term on maximizing cash flow for the KCFC distillery.
- (ii) CIDA has provided assistance through the University of Western Ontario to assess the market for solar water heating in Kenya as an assistance to Government and, in effect, to a Canadian solar water heating system manufacturer, Petrosun. Full details of the terms of reference and achievement of this aid project will be made available by CIDA and GOK as the outcome directly influences the scope of work of the agreed ESMP solar water heating investment project. In addition an engineer and an analyst funded by the World Solar Foundation of London are currently documenting the number and performance of solar installations now in use in Kenya.
  - (iii) The main focus of the new German aid program "Special Energy Project" (GTZ-SEP) is wind, biogas and solar for small scale rural applications. The program is mounted as an advisory service to the MOE. It appears well focussed, realistic and well managed. It should achieve the objective specified by the energy assessment.
  - (iv) Major reviews of sugar mill efficiency have been completed by SGV consultants under the Bank's sugar industry rehabilitation projects. These provide the basis for further analysis of net energy production though such work has yet to be undertaken. GOK has expressed keen interest in pursuing this option as a result of discussions during the follow-up mission.
  - (v) GOK has not initiated a formal review although the debacle of the KCFC investment is clearly now the subject of cabinet discussions which are regarded by the civil service as highly sensitive and confidential (see 2.3(ii) below). MEPD recognizes that some rationalization must take place and has independently raised the prospect of Bank assistance here at some later date. Ethanol has begun to be delivered from the Moroni plant to blending depots. However blending, which was supposed to start on April 15, has been forestalled due to unresolved pricing issues between oil companies and the AFC. Consequently production at the Moroni plant has temporarily ceased. There is no doubt



that rationalization of this industry is important and should be pursued when political circumstances permit an open and objective appraisal.

- (vi) Improve the supply and demand data for charcoal.
- (vi) Charcoal supply data remains deficient but demand data have been provided by the Beijer Institutes 'Fuelwood Cycle' study, now complete. The characteristics of feedstock conversion and supply patterns can be the subject of assistance under the ESMP, priority and funds permitting.
- (vii) Examine prospects for increased commercialization of fuelwood and charcoal production including pre-investment work for major peri-urban and rural plantations and large scale carbonization plants; the latter within the context of a centralized charcoal corporation, or a series of cooperatives.
- (vii) There has been no systematic approach to pre-investment work on peri-urban woodfuel plantations. A conceptual beginning to this work has been made by MOE for Mombasa though to cater for only a small portion of the near term demand. Preliminary design and costing of plantation development for a range of systems near major demand centres have been completed by the Beijer Institute. These provide the basis for detailed comprehensive pre-investment work as a part of a national strategy to meet the centralized urban-industrial market. In addition the Shell Oil Company has proposed a 350,000 ha fuelwood development on semi-arid land to service an iron smelting industry. GOK has indicated a need for assistance to review this proposal; to design investments in peri-urban plantations; to better manage recovery of woodfuels from existing resources and to examine prospects for improving the efficiency of carbonisation.
- (viii) Study the prospects for conversion to coal from oil in industries other than cement.
- (viii) GOK has promoted conversion to coal, coal-oil mixtures and coal-water mixes in recent draft energy policy and investment strategies and the energy component of the draft five year development plan. No detailed planning is in place to facilitate implementation and only limited data exist on industrial energy use, plant by plant. There is an urgent need for clarification of coal handling capacity at Mombasa before committing to a detailed design phase on coal conversion at any of the several major fuel oil consumers besides EAPC. This would be an essential component of an ESMP project on interfuel substitution in the industrial sector.

(ix) Develop a program to encourage energy conservation in small and medium sized industry beginning with the establishment of a detailed data base on end-use.

(ix) The only progress made here by GOK is a survey run jointly by MOE and Association of Manufacturers to establish energy use within factories. A 35% response rate was achieved and no follow-up has proceeded. IND has offered a US\$300,000 TA as part of the refinery energy conservation and engineering design for reconfiguration loan. This is unlikely to proceed quickly to negotiation hence GOK has asked for assistance with industrial energy conservation under the ESMP facility. However, IND have stated that the TA offer should not be separated from the refinery project and that pre-feasibility work in this area would serve no purpose.

### 2.3 IMPLEMENTATION ACTIVITIES PROPOSED

### GOVERNMENT AND BANK GROUP RESPONSE

(i) All investment in ethanol production should cease forthwith pending detailed reviews of the industry. This action is regarded as of highest priority.

(i) GOK responded by halting all further new investment in ethanol production facilities as recommended. The KCFC plant, costing 1.5 billion KSh to date, has been put into receivership but no liquidation has taken place. MEPD officials expressed fears that since the investment is physically unprotected looting may be occurring. The planned Riana plant proposal has also been shelved. Again the view was expressed by MEPD, unsolicited, that the Bank may be able to help resolve the issue of future activity in the industry at an appropriate time.

(ii) Establish an extension service for distribution and demonstration of improved stoves concentrating first on improved 'jikos' for cooking with charcoal in urban areas.

(ii) The barrier to construction of an extension service for improved charcoal and wood 'jikos' has been the lack of suitable rapid production techniques and smallholder entrepreneur training for the very attractive (30-50% efficiency gain) jikos now fully developed and tested. The dissemination of production techniques and modular construction facilities must proceed marketing. This bottleneck is being steadily removed with assistance from ITDG. There is little doubt that a major marketing effort could create a huge demand. This phase should be closely monitored for if it appears to be lagging, through lack of funds or expertise, the Bank could profitably assist, at the same time gaining experience with promotion techniques in other African markets. The stage appears set in Kenya for one of the first really successful ICS/IWS campaigns.



- (iii) Establish an Energy Development Institute focussing on interdisciplinary research of socio-economic issues emphasizing applied energy economics. The institute should not be concerned with energy technology R&D. This action is not a high priority.
- (iv) Execute the optimal refinery configuration taking into account all options to meet the agreed demand.
- (v) Expand exploration for oil and gas building on initiatives already proposed by the Bank.
- (vi) Expand geothermal exploration in Olkaria field as a matter of priority and support continued exploration in Eburru and Lake Bogoria regions. Produce a detailed investment plan for the development of the geothermal resource.
- (iii) The proposed Kenya Energy Development Institute (KEDI) is only a little further towards realisation than at the time of the assessment mission. The MOE, which is the main arbiter on the structure and function of KEDI, supports the views of the Bank on the matter. This is not a high priority issue at this time.
- (iv) The Bank (IND, IFC), USAID and GOK have narrowed the options for refined products supply to an agreed reconfiguration of the refinery using thermal cracking technology. Investment is now prevented by disagreements between GOK and oil companies over issues of crude procurement, partitioning of revenues from refining, and refinery management. It is apparent that these issues will not be quickly resolved and that investment will be delayed, even assuming that the proposals prove politically tenable. MOE raised the issue of splitting the conservation and reconfiguration investments.
- (v) The EGY petroleum exploration promotion project has proceeded successfully through the first round of defining potential and soliciting interest in further exploration. These oil companies began to negotiate exploration agreements but have ceased as GOK is not prepared to change foreign exchange regulations in line with normal practice regarding repatriation of profits and foreign exchange availability.
- (vi) Since the assessment the Olkaria field has indicated even greater promise with the tapping of dry steam. EGY has begun appraisal of a project to expand geothermal exploration in the wider Olkaria region and the Rift Valley while EAP projects is proceeding under Power IV to finance expansion of power production from the existing Olkaria field. A long term investment plan should follow from these projects.

- (vii) Complete project preparation for, and execute oil to coal conversion at the East African Portland Cement Company (EAPC).
- (vii) EAPC has commissioned a full feasibility study by Norcem Engineering of conversion both from fuel oil to coal firing and from wet to dry processing. Expansion of overall production and the logistics of coal handling and transportation between Mombasa and Athi River have also been studied. The study is funded by NORAD as a grant. EAPC accepted this offer over Danish aid because Norcem had recently completed a similar study in Tanzania and also has no links with equipment suppliers. Savings of about US\$1 million in foreign exchange will result although the investment is very marginal financially at the present coal import duty rate. The EAPC chairman wishes to proceed with the investment nevertheless. The study indicates severe constraints on handling further coal imports over the 30,000 te/yr additional for EAPC.

### 3. RELATED ACTIVITIES BY OTHER AGENCIES

3.1 A very positive finding of the status report mission was the extent to which bilateral aid agencies are utilizing the energy assessment report for planning their own aid programs in the energy sector. Much used copies of the blue cover report were produced at the CIDA, Dutch aid and GTZ program offices, and the USAID, Beijer Institute and others referred to the document as the only comprehensive source document for energy sector analyses so far available.

3.2. It is apparent that the CIDA financed project reviewing the solar water heating market and the GTZ-SEP(see 2.2(iii)) are to some extent influenced by the assessments recommendations. The USAID project was mostly defined prior to the outcome of the energy assessment and will not be renewed beyond September 1984. This project has focused on the establishment of 6 agroforestry centres leading to training of extension workers of the Ministries of Agriculture and Environment and Natural Resources (Forestry Department). USAID co-operated directly with the Dutch in this project and in support of the Beijer Institutes 'Fuelwood Cycle' study. The Dutch Government intends to support the implementation of pilot projects on agroforestry arising from this study with US\$3-4 million over the next few years, again in co-operation with the Beijer Institute. USAID/EDI funding or in-line staff support for MOE will probably cease during 1984. Ongoing aid to the energy sector is therefore concentrated heavily in rural energy and in particular on fuelwood-focussed agroforestry. It is noteworthy that this is also the most uncoordinated of the energy sector programs, (see 2.1(vii)) and one in which further effort is necessary to establish priorities, and guidelines for effective management seems desirable.



4. FURTHER ACTIVITIES PROPOSED UNDER THE ENERGY SECTOR  
MANAGEMENT PROGRAM

4.1 A Series of discussions held with senior staff of the Ministries of Energy, Economic Planning and Development, Environment and Natural Resources, Industry, the EAP&L and the EAPC culminated in an agreed program of action which can be finalised by an official exchange of telexes. A ranked list of agreed projects is presented below. MOE and EAPL raised several other projects which may also be considered for ESMP support subject to clarification of scope, and of the existing commitments by both the Bank Group and other agencies. These include:

- (i) Power loss analysis for the main grid (submitted to UNDP but rejected, apparently due to lack of funds)
- (ii) An analysis of interconnection options to use major power resources of neighbouring countries
- (iii) A full tariff study to determine a long term as well as short term electricity pricing strategy

The best vehicle for these studies is the Banks loan for the Kiambere project now being negotiated, or failing that, the expanded Olkaria field development loan facility.

4.2 In order of priority:

SOLAR WATER HEATING

- (i) Pursuant to the recommendation of the assessment mission GOK is keen to proceed to detailed evaluation and project development for a major solar water heater installation program. The first stage of the project - economic analyses and market assessment - is at least partly complete. The project will review and if necessary, upgrade this phase before proceeding to detailed design of an investment package incorporating a financing plan and operational strategy for installation under EAPL's administration of 20,000-30,000 household solar systems plus industrial and commercial systems for hotels, hospitals and other users of low-grade hot water over a 4-5 year period. The Kenyan power system is energy rather than capacity constrained, hence solar energy will displace oil-fired generation at the margin. The project will assess the capacity of local solar system manufacturers to meet the anticipated demand and will identify training requirements for installation.

<u>Part I:</u>	3 man months
Market and economic studies for household and industry:	\$ 25,000
<u>Part II:</u>	12 man months
Preinvestment studies for household and selected commercial applications plus local production and installation strategy	\$100,000
<u>Total Project</u>	
<u>Duration:</u>	6 months
<u>Total Project</u>	
<u>Cost:</u>	\$125,000

EFFICIENT BAGASSE UTILIZATION

(ii) GOK wishes to further define the prospect identified by the energy assessment for upgrading sugar mill process energy efficiency to generate surplus bagasse for sale as power, or as a densified solid fuel for industry and households. A detailed review of the markets for surplus power and energy in both sugar production zones, and of the incremental costs and benefits of serving these markets, would complement the Banks sugar industry rehabilitation program. The Kenyan sugar industry is deteriorating financially due to artificially low sugar prices set by GOK which owns 98% of the Western zone industry. Any significant additional cash flow generated through relatively small investments with a high financial rates of return would be welcomed by industry management and GOK. This is to proceed only with a clear understanding by GOK that it does not in any way negate the need identified by the Bank (EAP-AGR) for revision of sugar industry pricing policies.

Phase I: 6 months:

- (i) Marketing studies: \$25,000
- (ii) Prefeasibility engineering reviews and economic analysis: \$50,000

Phase II: 12 months:

- (i) Full design and costing: \$200,000
- (ii) Investment planning and financing strategy: \$50,000

Total Project  
Duration: 12 months

Total Project  
Cost: US\$325,000

COMMERCIALIZATION AND IMPROVED MANAGEMENT OF WOODFUEL PRODUCTION

(iii) GOK accepts the assessment mission's view that the establishment of a national plan for commercial woodfuel plantations to meet urban and industrial demands is a high priority and must also incorporate a program for improved management of the existing woodfuel resource. Accordingly this project is to build on the work of the Beijer Institute and others to design and cost peri-urban woodfuel plantations for Nairobi and Mombasa, develop methods to improve the recovery of existing forest residues including improved efficiency of carbonization, and to develop improved management techniques for the coastal mangrove forests. GOK has also requested a review of recent private sector proposals for large scale woodfuel plantations as fuel for pig-iron production.

Part I: 12 man months

- (i) Economic forest management and woodfuel marketing and investment planning studies regionally and nationally \$100,000

In Parallel:

Part II: 6 man months

- (i) Commercial woodfuel plantation design and costing. Management and marketing reviews \$100,000



Total Project  
Duration: 6 months

Total Project  
Cost: \$200,000

RATIONALIZING ETHANOL PRODUCTION

- (iv) The assessment mission conclusions regarding the need for urgent action to rationalize ethanol production is even more pertinent in the present situation than two years ago. The Ministry of Economic Planning and Development wishes to draw on the Bank's assistance for this purpose as and when this becomes politically possible. The project would review options for use or disposal of existing KCFC plant and blending facilities. A production cost and end-use monitoring system should also be established as a management tool for the remaining industry to permit ongoing adjustment in line with market conditions and economic viability.

Phase I: 6 man months  
(i) Productions audit,  
cost analysis and  
monitoring design:  
\$75,000

(ii) Prefeasibility on  
process optimization  
prospects:  
\$50,000

Phase II: 12 man months  
(i) Preinvestment  
studies on process  
modifications:  
\$100,000

Total Project  
Duration: 6 months

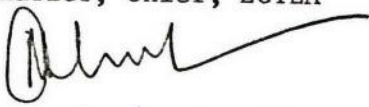
Total Project  
Cost \$150,000





## OFFICE MEMORANDUM

TO: Mr. Julian Bharier, Chief, EGYEA                      DATE: May 11, 1983

FROM: Masood Ahmed 

RE: SENEGAL: Energy Assessment Report Discussion - Back-to-Office Report

1. In accordance with our terms of reference dated April 28th, Mr. B. Chadenet (consultant) and I discussed the green cover draft of the above report which was undertaken as part of the Joint UNDP/World Bank Energy Assessment Program, with the Government of Senegal in Dakar on May 2 - 4. The results of our discussions are summarized below. A list of persons met is attached as Annex I.

Main Report Discussion

2. The Director of Energy in the Ministry of Industry organized a series of detailed and intensive discussions on the draft report with his staff, other Government departments and Ministries (Planning, Science and Technology) and with the representatives of the parastatal agencies involved in the energy sector (Senelec, Petrosen, Sinaes, etc.). During these meetings we reviewed the draft report paragraph by paragraph to incorporate the Government's comments and to take account of new information obtained since the main assessment mission in June 1982. From these discussions it became evident that the report had been extensively reviewed by GOS officials. Various agencies had prepared detailed comments on the report and these had been considered at a meeting of the National Energy Committee prior to our arrival. The recently appointed Minister of Industry had also been well briefed on the report's main findings and recommendations, which he discussed with us at a wrap-up meeting prior to our departure. 1/

3. In general, the officials we met agreed with the report's principal conclusions. In particular, our analysis of the limited operational effectiveness of the institutional framework for energy planning and coordination was accepted by the principal agencies involved. Indeed our proposal to "soften" the language in the relevant chapter for the blue cover was turned down by the Government on the grounds that the existing text was an accurate reflection of the prevailing situation.

4. At the end of our discussions the Government cleared the draft report for distribution in final (blue) cover, subject to some updating

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1/ We also briefed staff of the UNDP Resident Representative in Senegal, the Bank's Resident Representative in Senegal and the loan officer who was in Senegal at the time. However, because of other commitments none of them were able to attend the various meetings.

and minor editorial changes which we agreed with them. Those revisions are now being made and a blue cover should be ready for distribution by the end of May.

#### Follow-up Technical Assistance

5. The draft report identified a number of areas where technical assistance will be needed to analyze investment or policy options in more detail. We discussed these requirements with the Government and a revised list of priority activities for technical assistance is attached as Annex II.

6. The Ministry of Industry has expressed strong interest in the Bank providing some of this technical assistance as part of the follow up to the Energy Assessment Report. The Ministry has outlined three areas which they would like to be covered by such a program:

- (i) establishing an effective capability to develop and execute a national energy efficiency improvement program;
- (ii) strengthening the capacity in the Department of Energy to coordinate the diverse activities in the renewable energy field and to develop an integrated national renewable energy program which focusses on directly relevant projects and technologies; and
- (iii) strengthening the capacity of the Department of Energy to serve as a technical secretariat for the National Energy Committee, focussing in particular on the development of a realistic and prioritized energy sector investment and financing program.

7. The mission agreed that these were important areas for a possible technical assistance program but we also indicated that a successful resolution of these issues would require a parallel effort and commitment on the part of the Government to define clearly the institutional responsibilities and relationships of the various agencies involved. In particular the role of the Energy Department in petroleum issues still needs to be clarified. We also indicated that a useful next step in this regard would be for the Energy Department to prepare a detailed outline and costing of the proposed Technical Assistance Program and to discuss this with the other ministries/departments concerned prior to sending it to the Bank for consideration as a possible technical assistance project. The Department of Energy has agreed to prepare this outline with the assistance of the two Bank-financed advisors in the Ministry of Industry.

#### Manantali Transmission Feasibility Study

8. Another important candidate for technical assistance is to analyze the technical and economic feasibility of transmitting electricity from the proposed Manantali Dam to Dakar. Prior to our



mission, the Bank had discussed with the visiting OMVS High Commissioner in Washington the possibility of financing, through the Joint Bank/UNDP Energy Sector Management Program a pre-feasibility study for this work. During our mission we learned that the Government of Senegal has also asked for German bilateral aid to carry out this study. Consequently, before embarking on this work we would need to determine the outcome of the request for German assistance; this is likely to be known by June 1983.

Status of Energy Advisors Financed Under Existing Technical Assistance Project

9. In discussing the technical assistance that the Bank could provide in the future, the work program and status of the two advisors financed through the existing Energy Technical Assistance credit was also discussed. It is not clear that these advisors are contributing as effectively as they could, mainly because their precise responsibilities and detailed work programs still need to be spelt out. The problem is particularly acute for Mr. de Mesmay, the overall Energy Advisor to the Minister, who still does not have full access to petroleum issues and whose scope of work will be largely duplicated by another Canadian financed resident Energy Advisor due to arrive in Dakar in mid May. Moreover, Mr. de Mesmay has himself indicated that during the last year of his assignment (beginning September 1983) he would prefer to be based partly in Dakar and partly in Paris. He has submitted a formal request to this effect which I agreed to pass on to Mr. Thiam whose division is responsible for this project. In evaluating the merits of this proposal it is important to assess whether the continued services of a general energy adviser financed by the Bank are needed at all, given the imminent arrival of the Canadian expert. In regard to Mr. Theriault the electricity advisor to the Director of Energy, the Government has requested that his contract be renewed for a third year, beginning July 1983. Again it would be important to ensure that this is an optimal use of funds under the project and that he has a well defined work program for the third year. In effect, now that the assessment report has been completed and discussed with the Government, it may be useful to take stock of how the remaining uncommitted funds under the existing Technical Assistance project (including any funds that may become available if Mr. de Mesmay decides to leave) can be best utilized to assist the Government in implementing the priority recommendation that have been identified.

Next Steps

- (i) The green cover draft is being revised and will be sent to the Programs division for clearance to blue cover by the end of this month.
- (ii) I am sending to Mr. Thiam a copy of the request by Mr. de Mesmay to alter the terms of his assignment; Mr. Thiam's division will also need to respond to the question of extending Mr. Theriault's contract.

- (iii) The Department of Energy is preparing an outline for a possible technical assistance project and will submit this to the Bank after it has been discussed and approved by the concerned Government agencies.
- (iv) The Bank should verify the status of German financing for the proposed Manantali Transmission study before we implement such a study under the Energy Sector Management Program.

cc: Messrs. de La Renaudiere, Palein, de Leede, Redfern, de Raet (WA2); El-Darwish, Bouhaouala, Thiam, Sigwalt, Wilton (WAP); Hendricks (IND); Rovani, Rao, Bourcier, Sadove, Sheehan, Bauer, Barbu, Hughart, Wackman (EGY); Chadenet (consultant); Benjamin (Resident Representative, Senegal); W. Mashler, M. Potashnik (UNDP, New York)

EGYEA staff

Attachment

MAhmed:cra



LIST OF PERSONS MET

Ministry of Industrial Development

Ms. Djiguel, Department of Energy

Messrs. Serigne Lamine Diop, Minister  
N. Fall, Director of Energy  
Faye, Director of Mines  
Labat, Advisor to the Minister  
de Mesmay, Advisor to the Minister  
Therriault, Advisor to the Director of Energy  
Cisse, Department of Energy  
Dioh, Department of Energy  
Sieme, Department of Energy  
Adj, Department of Energy  
Diop, Department of Energy  
Dianka, Department of Energy  
Guisse, Department of Mines

Ministry of Planning

Mr. Dehier, Advisor

Ministry of Scientific Research

Mr. Daffe, Minister

Mr. Toure, Sinaes

Senelec

Mr. Alexandrin, President, Director General

Ministry of Environmental Protection (Forestry)

Mr. Sissok Kho, Director of Cabinet

TECHNICAL ASSISTANCE REQUIREMENTS IN THE ENERGY SECTOR

Based on the analysis in the Energy Assessment Report and on subsequent discussions with the Government of Senegal, the following is a list of priority areas for technical assistance by external aid agencies.

A. DEMAND MANAGEMENT

- (i) Accelerate the program to encourage the adoption of the Banak Suuf improved wood stove; and the more widespread dissemination of the improved charcoal conversion kilns which have been developed in the Casamance area.
- (ii) Establish a comprehensive program to improve the efficiency of energy use in the larger users of commercial energy where the potential for substantial energy savings has already been established; this would encompass a program of detailed energy audits; technical support and information to help implement better housekeeping as well as more capital intensive measures to improve energy efficiency; and the development of a regulatory, pricing and financial incentive framework necessary to bring about economically justified improvements in energy utilization efficiency.
- (iii) Evaluate and implement the potential for energy savings in transport and in commercial/residential buildings; determine the feasibility of introducing a continuous working day in the Dakar area;

B. ENERGY SUPPLY AND TRANSFORMATION

Electric Power

- (i) Review and update the generation and transmission master plan for electricity, with particular reference to the revised forecasts of load growth and the impact of alternative reserve and maintenance criteria on the timing and magnitude of investment requirements. A number of sub-studies will be necessary for this.
- (ii) Establish firm (+ 20%) cost estimates for transmitting electric power from the Manantali Dam.
- (iii) Review the relative merits of the Kekreti and Sambangalou hydropower projects on the Gambia River.



- (iv) Prepare a rural electrification plan within the context of an overall rural energy supply strategy.

Peat

- (v) Prepare a synthesis of the various peat studies on completion to determine the optimal allocation of peat as between electricity generation, household or industrial fuel, agricultural use, etc.

Coal

- (vi) Review the scope for substituting coal for oil in the cement and phosphate industries following completion of the second phase of the coal import study;
- (vii) Determine the potential for coal use in power generation once hydro and peat options are better costed.
- (viii) Once the coal market has thus been determined, carry out a feasibility study of the costs of coal import and handling infrastructure using existing or new facilities at the port of Dakar.

Forestry

- (ix) Strengthening of Forestry Department (staff, training, curricula, etc.) to enable the implementation of a much larger reforestation program.
- (x) Develop new forestry technical packages adapted to marginal lands in arid and semi-arid zones.

Other Biomass and Renewables

- (xi) Study of biomass energy potential, focussing initially on agricultural residues. The two important sub-components of this study would be:
  - (a) establishing the technical and economic potential of using groundnut shells as fuel, and
  - (b) establishing the optimal utilization for surplus bagasse either as fuel for electricity generation or as fuel to convert surplus molasses into ethanol which could substitute for gasoline.
- (xii) Evaluate the economics and market potential for substituting electric and oil fired water heating by solar water heaters in commercial/residential sector.

- (xiii) Establish a network to monitor systematically solar and wind energy resources.

Institutional and Overall Sector Management

- (xiv) Strengthen the technical capacity of the Energy Department in the Ministry of Industrial Development to enable it to discharge effectively its responsibilities in regard to the coordination of line agencies and sub-sector investment programs and to act as a technical secretariat to the National Energy Committee;
- (xv) Prepare an integrated energy sector investment program and associated financing plan;
- (xvi) Re-orient the renewable energy research and development program to focus more on technologies/applications which are likely to have early payoffs in the Senegalese context.

MAhmed  
5/11/83



*Chron*

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**BOOK OF TWO:  
MR. HORST WAGNER  
CAPITAL HOTEL LILONGWE  
MALAWI**

**MR. HORST WAGNER  
MOUNT SOCHE HOTEL  
BLANTYRE, MALAWI**

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DEPARTMENT:

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TO:

WORLD BANK GUEST, MR. HORST WAGNER. (AAA)

RE CONSULTANT VISIT ON TOBACCO INDUSTRY EFFICIENCY IMPROVEMENT.

GRATEFUL IF YOU COULD ADVISE BY RETURN TELEX WHETHER THE DRAFT

TERMS OF REFERENCE FOR THIS ASSIGNMENT WHICH YOU CARRIED ARE

ACCEPTABLE TO THE GOVERNMENT AND WHEN THEY WOULD LIKE THE

CONSULTANT TO VISIT MALAWI. WE HAVE CONTACTED LAMBERT WHO IS

AVAILABLE FOR SECOND HALF OF MAY BUT NEED RESPONSE FROM YOU TO

FIRM UP HIS VISIT. (BBB) PETER HALL WOULD ALSO LIKE TO KNOW THE

OUTCOME OF YOUR DISCUSSIONS WITH THE GOVERNMENT ON THE PROPOSED

FORESTRY REVIEW. REGARDS, MASOOD AHMED, ENERGY DEPARTMENT,

WORLD BANK.

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END OF TEXT

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CLASS OF SERVICE: FR/Telex

TELEX NO.:

DATE: 5/9/83

SUBJECT:

DRAFTED BY:

MAhmed:cra

CLEARANCES AND COPY DISTRIBUTION:

AUTHORIZED BY (Name and Signature):

CC: Mr. P. Hall

Julian Bharier

DEPARTMENT:

ENERGY


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## OFFICE MEMORANDUM

TO: Mr. Hans Wyss, EAP May 9, 1983

FROM: Yves Rovani, Director, Energy Department 

SUBJECT: Energy Sector Management Program Activities in the Eastern Africa Region

Further to our recent discussion, I am attaching for your information a note listing the ongoing and planned technical assistance activities being financed under the Energy Sector Management Program in the Eastern Africa Region. In addition to these activities, the Energy Assessments and Management Division is, as you know, executing an Energy Planning Technical Assistance Project for the UNDP in Mauritius.

cc: Messrs. Bronfman, Rao, Bharier

MAhmed:cra

Energy Sector Management Program  
Ongoing and Planned Activities

East Africa

Uganda

Petroleum Import Arrangements Assessment Mission endorsed urgent Government request for assistance in rationalizing procedures and documentation for imports of petroleum products by private marketing companies. This was subsequently provided through a three-week mission (from January 26 to February 12, 1983) by a consultant expert (Ogmen). The results of his work are being summarized in an Activity Completion Report to be issued in May.

Sudan

Management Information System At the request of the Minister of Petroleum, endorsed by the Assessment Mission, a consultant (Ansari) visited Sudan from February 22 - April 1, 1983 to help establish a data reporting and monitoring system which would enable the senior policymakers in the Ministry to take prompt and informed decisions on key sector issues. This work has also identified the need for a clearer definition of the functions of different departments in the Ministry. The results of this work are being incorporated in the draft Energy Assessment Report. A more detailed Activity Completion Report will also be issued in early May.

Kenya

Country Status Report A staff mission (Newcombe) has just returned from Nairobi and its report will be issued next week. This mission has evaluated the progress made in implementing the various policy, investment and institutional recommendations made in the Energy Assessment Report, which was discussed with the Government about a year ago. The Country Status Report will also identify those areas where further technical assistance is necessary to help implement the Assessment recommendations.

Malawi

Subsequent to the the Assessment Mission the Government has requested follow-up assistance in two areas:

Efficiency Improvements in the Tobacco Industry

Draft terms of reference for a consultant study to evaluate the various technical options for improving the efficiency of wood use in the tobacco industry has been prepared and are being discussed with the Government by a Forestry mission (Wagner). Suitable candidates are being identified for a mission tentatively scheduled for May/June 1983.



- 2 -

## Institutional Arrangements for Energy Planning

The Government is preparing draft terms of reference and scope of responsibilities for the recently created Energy Unit in the Economic Planning Division. ESMP finance is likely to be required to assist the Government in finalizing these proposals and in defining their resource and manpower requirements. More extensive technical assistance would be needed to strengthen the energy planning unit in its initial operations; this may be provided under the Technical Assistance loan associated with the proposed SAL.

### Burundi

Petroleum Supply Management The Government has requested assistance to review the existing arrangements for imports of petroleum products and to evaluate alternative mechanisms and routes. Draft terms of reference for this task have been agreed with the Government. A potential candidate has been identified and is scheduled to visit Burundi in May/June.

Negotiations with Private Oil Companies During his recent visit to the Bank, the Minister of Energy asked for urgent assistance to help the Government prepare for its forthcoming negotiations with a private oil company on exploration activity in Burundi. Terms of Reference for this work are being prepared and consultants in the areas of petroleum exploration, negotiations and cross border unitization are being identified. The assistance is likely to be provided over the next three months and will fill an important gap until larger funds are made available under the proposed Third Technical Assistance Project (due to go to the Board in September 1983).

### Zimbabwe

Power Loss Reduction A mission (Sears et al) visited Zimbabwe in November 1982 to evaluate the potential for reducing losses in the electric power distribution network. The mission has identified substantial savings that could be realized in the short and medium term. Their draft report was circulated in February 1983 for comments and is now being finalized.

### Other Countries

ESMP Assistance is also likely to be provided to Rwanda and Zambia during the coming 3-6 months; the scope of work in each country is being defined.

OFFICE MEMORANDUM

*file - down*

TO: EGY Senior Staff

DATE: April 29, 1983

FROM: Julian Bharier, Chief, EGYEA *JB*

SUBJECT: Energy Sector Management Program --  
Project Document

I am attaching for your information a copy of the above project document which has just been signed on behalf of the UNDP and the Bank.

Either Masood Ahmed or I will be happy to respond to queries you might have on the project document or on the Sector Management Program.

Attachment

MAhmed:jl



UNITED NATIONS DEVELOPMENT PROGRAMME

Interregional Project Agreement

Project Document

**Title:** UNDP/World Bank Energy Sector Management Programme - a Technical Assistance Programme linked to the Energy Sector Assessment Program  
**Duration:** 2 years  
**Starting Date:** April 1983

**Number:** INT/83/005/A 73/42

**Sector:** Energy

**Government Cooperating Agencies:**

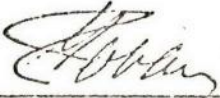
To be identified in each of the participating countries.

**Date of Submission:** April 1983

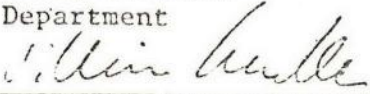
**Executing Agency:** The World Bank

**Government Contribution:** (In kind--See Section IIC)

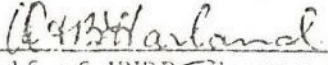
**UNDP Contribution:** \$1,700,000 (Energy Account)

**Approved:**   
On behalf of Executing Agency  
Yves Rovani, Director  
Energy Department

**Date:** April 1, 1983

**Approved:**   
On behalf of the UNDP, Division for  
Global and Interregional Projects

**Date:** 6/4/83

**Approved:**   
On behalf of UNDP Energy Account

**Date:** 6 April 1983

## PART I

### Legal Context

1. This agreement will become effective when signed on behalf of the United Nations Development Programme and the World Bank. Cooperating arrangements with participating countries will be undertaken through exchange of letters at which time the respective Basic Agreement between Governments and the United Nations Development Programme shall take effect.

## PART II

### A. Development Objectives

2. The long term objective of the Energy Sector Management Programme, of which this project constitutes the initial phase, is to enable developing countries to successfully complete the transition to an era of high cost energy by strengthening their capability to plan and manage all types of energy projects within the framework of an integrated sector development strategy.

### B. Immediate Objectives

3. The immediate objective of the Energy Sector Management Programme (ESMP) is to provide timely and well focussed technical assistance to participating developing countries to help them implement a broad range of recommendations made by the Energy Sector Assessment Reports in four major areas: sector management, policy formulation and institutional strengthening; energy efficiency improvements; rural and renewable energy development; and manpower and institutional development.

4. The immediate objectives of this project are: (i) to review the technical assistance requirements in countries for which assessment reports have been completed or are under preparation and to identify how these requirements could be met from the various bilateral, multilateral and other agencies; (ii) to initiate ESMP operations in priority countries where such assistance is urgently required and has been requested by the Government; (iii) to evaluate actions which have been taken in the wake of the energy assessments and identify future work; and (iv) in light of the above, to prepare a detailed medium term work programme for the various components of the ESMP.

### C. Special Considerations

5. This project builds upon and is, in effect, defined by the results of the Energy Sector Assessment Programme which is being executed by the World Bank and financed jointly by the UNDP and the World Bank under the interregional project "Assessment of the Investment and Technical Assistance Needs in the Energy Sector." (Project INT/80/009).



D. Background and Justification

6. By the end of the 1970s most developing countries found that they had to deal with new and massive problems of adjustment in the energy sector. However, decisions on the substitution of imported oil by indigenous resources or other types of imported fuels were by no means easy to make. There were great uncertainties about domestic energy resource potential, about the types of technologies which could be adopted for the production, distribution and use of different fuels, about the availability and cost of finance for energy resource development and the time required to prepare and implement appropriate projects. Moreover, in most developing countries comprehensive energy sector management was in a rudimentary state. Basic information, for example, on demand patterns and growth, was poor, little of the preinvestment work necessary for effective decision making had been carried out and there was limited analysis of policy issues and of the mechanisms for coordinating the actions of the various users and producers of different types of energy. While many countries clearly needed to improve the efficiency of energy use there was little experience or technical capability in this area.

7. As a first step in response to this situation, the World Bank and the United Nations Development Programme in November 1980 jointly launched a 60-country Energy Sector Assessment Programme designed to provide a rapid diagnosis of the major energy problems faced by the developing countries and an evaluation of the options for solving these problems. Since the Programme began, 13 assessments have been completed, a further 12 are in various stages of preparation and 12 are planned to start in the next year.

8. The response to the Assessment Programme has been strong, with the number of requests to date from Government in excess of the 60 originally envisaged. Many Governments already have begun to use these reports to clarify their sector strategy and prepare solutions to major problems. The reports are also being used increasingly by many agencies to help them in developing their own assistance programmes for these countries.

9. The successful completion of a number of Energy Assessment Reports has highlighted the urgent need for follow up assistance to ensure that priority issues identified by these reports are in fact effectively addressed. This assistance falls into two broad categories. First, specific policy or investment options identified by the energy assessment reports frequently need to be analyzed in much greater detail before a final decision can be taken. Because of their essentially diagnostic nature, this detailed feasibility work cannot be incorporated into the assessment process itself but many countries nevertheless require assistance in carrying out these tasks. The second type of assistance that is being identified as having high priority relates to the strengthening of the institutional and management framework for the energy sector, particularly at the national level. In nearly all the countries where assessment missions have been fielded,



this assistance is likely to be a vital element in ensuring that complex, more diversified and much larger energy investment programs are successfully implemented. It will also be a necessary adjunct for developing effective energy demand management programs which span several fuels and user sectors.

10. Some of this assistance can be, and is being, provided by other donor agencies active in the field; indeed, one of the objectives of the assessment reports is to act as a catalyst in mobilizing such assistance. However, in a number of important areas additional effort is required because the existing mechanisms are either inadequate or not sufficiently flexible. A reflection of this is the increasing number of requests from countries where assessments have been carried out for the UNDP/Bank assessment team to continue to provide independent and objective policy and programme advice and support in helping to implement the recommendations of completed assessment reports. A few of these requests have been accommodated to date by reallocating resources from other UNDP/World Bank activities, but a growing file of requests from other countries cannot be financed from existing resources. The proposed ESMP, which is described more fully in a joint UNDP/World Bank brochure of November 1982, 1/ has been developed in response to this demonstrated need. The massive need for investment and the related planning and pre-investment work in the energy sector form the basic justification for the program and for the partnership of the UNDP and the World Bank in executing it.

#### E. Output

11. The output of the project, will essentially be the tangible impact in the countries involved in improved policies, investment plans and priorities, project preparation, energy efficiency, training programmes and institutional arrangements. In addition, the governments will receive two types of reports, as appropriate:

(i) project descriptions and pre-feasibility studies, including justification and terms of reference for feasibility studies and recommendations for further project preparation, financing and other actions; and

(ii) technical/management assistance studies including evaluation and recommendations on investment programmes, policy/institutional changes, further technical assistance programmes, and training programmes, with proposals for financing and other actions.

---

1/ The Joint UNDP/World Bank Energy Sector Assessment Programme and Energy Sector Management Programme: A Progress Report. November 1982.



F. Activities

12. The full Energy Sector Management Programme comprises four major inter-related activities: (i) Energy Management Assistance Programme; (ii) Energy Efficiency Programme; (iii) Rural/Renewable Energy Programme; and (iv) Manpower and Institutional Development Programme:

(i) Energy Management Assistance Programme

13. This programme would enable the government to draw on Bank and/or UNDP staff resources, basically the same types of expertise as has been used in the assessment process, to help it strengthen the capability to effectively manage its energy sector and coordinate external assistance. If the government so requests, the process of helping the country could include:

- (a) assisting the government in improving its capacity for sector management through technical advice and support for the country's energy planning and management organization; technical assistance for establishing and maintaining an appropriate energy data base; and definition, preparation, supervision and evaluation of selected pre-feasibility studies and project proposals.
- (b) defining the specific requirements for technical assistance and pre-investment activities, including, e.g., the objectives, work plan and required inputs for both the government and external contributions in a format the government can use in discussion with official bilateral and multilateral financing agencies or with interested private investors;
- (c) assisting the government in developing a medium-term investment plan and an associated portfolio of project profiles for the major projects;
- (d) helping the government identify sources of finance, both public and private, for each of the follow-up activities identified during the assessment. This can include participating in meetings of aid consultative groups or UNDP Round Tables for the least developed countries, arranging special meetings or seeking financing through bilateral discussions with individual financing agencies;

(ii) Energy Efficiency Programme:

14. Improving the efficiency of energy use has substantial potential and high returns in almost all developing countries. An Energy Efficiency Programme has therefore been designed which would include:

- (a) assistance to governments in the establishment of a national energy efficiency capability, including manpower

development and institutional strengthening, the development of appropriate policies and programmes for managing energy demand and the implementation of energy audits in the industrial, transport and other sectors with the objective of identifying energy-saving opportunities and providing recommendations for achieving these.

(b) assistance in preparing pre-feasibility studies of potential energy saving investments in economic subsectors where energy saving potential has already been identified. This includes a preliminary survey of the subsector to pinpoint the most promising energy conservation investment projects and the preparation of technical and economic pre-feasibility studies leading to the preparation of energy conservation investment projects for implementation by the appropriate financing sources.

(c) Power System Loss Reduction. This would identify and quantify efficiency improvement requirements in electric power systems in countries which are willing to take steps to effectively reduce power system losses. Individual system improvement projects would be identified and subsequently prepared to the point where they would be suitable for financing by the World Bank, UNDP or other multilateral and/or bilateral institutions. Preparatory work for this component has already been financed from the UNDP Energy Account in 1982.

(iii) Rural/Renewable Energy Programme:

15. The energy assessment missions have emphasized the need for help in strengthening institutions, policies and practical programmes for new and renewable energy resources, particularly in the rural sector. In addition, a variety of pilot projects has been identified and these need to be evaluated and implemented before major investments can be made in renewable energy supply and conservation. These projects are relatively small-scale but heavy staff inputs are required for their preparation and supervision. While many donor agencies have expressed interest in providing funds for the projects themselves a mechanism is needed by which expert preparation and supervision resources can be provided to assess the performance of pilot projects and identify their investment potential, as well as to develop the necessary skills in the country to continue with this work. The proposed Rural/Renewable Energy Programme is designed to meet this need. It will cover activities flowing from the Assessment Programme and provide a focus for rural/renewable energy activities as well as a means of ensuring that experience gained in pilot projects is disseminated to all concerned countries. The criteria for involvement in specific pilot projects will be the Government's commitment to an appropriate institutional framework and to the potential follow-up investment as part of a national programme.



(iv) Manpower and Institutional Development Programme

16. The Assessment Programme and other work done by various UN agencies and the World Bank have identified a critical need for supporting manpower and institutional development in the energy sector. The other components of the Energy Sector Management Programme will address these problems in their relevant areas (sector management, energy efficiency, rural/renewable energy), and this integrated approach will be the most effective way to address certain specific training and institutional development needs. However, there are some types of needs that will not be fully covered in this way, and a supplemental manpower/institutional programme is therefore required.

17. This activity may include the following:

- diagnoses of organizational/managerial/manpower problems in key sector institutions with recommendations and preparation of terms of reference for further action;
- in-country training programmes to meet specific specialist needs (energy planning, energy economics, finance, technical specialities);
- workshops and seminars involving technical experts from various developing countries to exchange ideas and experience; -
- short-term external training courses in various specialities (technical, economic, etc.);
- secondment of key individuals to foreign energy sector institutions and financing agencies;

18. As shown in the following table the full scale operation of the Energy Sector Management Programme would entail a total resource allocation of \$6 million in 1983 rising to \$11 million by 1986 (all in 1982\$).

ENERGY SECTOR MANAGEMENT PROGRAMME  
ESTIMATED FINANCIAL REQUIREMENTS  
1983-86  
(\$ million in 1982 prices)

	1983	1984	1985	1985	TOTAL
Energy Management Assistance Programme	1.50	1.50	2.00	2.00	7.0
Energy Efficiency Programme	3.00	5.00	5.50	5.50	19.00
(industry, transport and major energy-using sectors)	(2.00)	(3.50)	(3.50)	(3.50)	(12.50)
(Power Loss-Reduction Project)	(1.00)	(1.50)	(2.00)	(2.00)	(6.50)
Rural/Renewable Energy Programme	1.00	1.50	2.50	3.00	8.00
Manpower and Institutional Development Programme	0.50	0.50	0.50	0.50	2.00
<b>TOTAL</b>	<b>6.00</b>	<b>8.50</b>	<b>10.50</b>	<b>11.00</b>	<b>36.00</b>

18. As the full extent of these resources has yet to be mobilized, UNDP and the World Bank propose to adopt a phased approach in developing the programme. This project document which covers the initial phase of the Program, would enable the operation to begin on a limited scale. It would allow the executing agency to recruit a core team of energy planners, economists or technical specialists for a two-year period and to respond to priority requests for assistance in some of the countries where assessments have been carried out or are under preparation (see Annex 1 attached). Detailed work programmes in each of these countries are being worked out in consultation with the governments and the UNDP resident representatives. These programs will take into account the recommendations of the assessment reports, the requests from Governments and the availability of potential financing sources. This project would also enable the preparation of a detailed work programme for the full scale operation of the Energy Sector Management Programme which would be used as a basis for discussion with potential donors who could contribute additional resources for financing these operations.

19. Although there are four broad "components" to the programme, it is an integrated programme to be managed as such, in the same manner as the Energy Sector Assessment Programme. This is essential to ensure that the program responds to priority needs in a flexible way, that progress is effectively monitored and that the quality of output is maintained.

### C. Inputs

20. (a) Government Inputs: Each participating Government would be expected to provide appropriate counterpart staff for the consultants funded under the project and to carry out the preparatory work required (such as data collection and analysis, surveys, institutional studies, etc.). The Government would normally also provide office space, supplies, secretarial services and local transport for the effective operation of the project.

(b) UNDP Inputs: These would include:

- Three full time energy experts for a period of 24 months each. These would comprise an energy economist/planner, a technical specialist and a program/management officer. This last position will be recruited by UNDP and will be based initially at UNDP Headquarters.
- Fifty months of short-term consultants.
- A budget to cover travel and per diem costs for both the full-time experts and short-term consultants
- A budget to cover secretarial, administration and other direct costs associated with setting up the program.
- Details of these inputs are set out in the attached budget.



- (c) Donor Agency Input: These will be incorporated in the total Energy Sector Management Program as they become available, and the budget document attached as Annex 2 will be revised accordingly.

Sections H through M

(Not Applicable.)

PART III

21. A. Schedule of Reviews

The project will be subject to periodic reviews by UNDP and the World Bank, in accordance with the UNDP's established policies and procedures.

B. Evaluation

The project will be subject to evaluation in accordance with UNDP's established policies and procedures.

C. Progress and Terminal Reports

The Bank will submit to UNDP semi-annual progress reports and a terminal report upon completion of the project, as well as reports of all country specific activities funded under the project as they become available.

ANNEX I

The Joint UNDP/World Bank Energy Assessment Programme

Assessments Completed Since Nov. 1980	Assessments in Progress
Bangladesh	Benin
Burundi	Bolivia
Haiti	Ethiopia
Indonesia	Fiji
Kenya	Morocco
Malawi	Nepal
Mauritius	Niger
Papua New Guinea	Nigeria
Rwanda	Peru
Sri Lanka	Senegal
Turkey	Solomons
Zambia	Sudan
Zimbabwe	Togo
	Uganda
	Yemen A.R.

4/1/83



PROJECT BUDGET COVERING THE UNDP CONTRIBUTION (IN U.S. DOLLARS)

Country : INTERREGIONAL  
 Number : INT/83/005  
 Title : Energy Sector Management Program

		CY83		CY84		CY85			
		SM	TOTAL	SM	TOTAL	SM	TOTAL		
10.0	Personnel								
11.1	Energy Expert	24	208,000	6	40,000	12	108,000	6	60,000
11.2	Energy Expert	24	208,000	6	40,000	12	108,000	6	60,000
11.3	Program Management <u>a/</u>	24	208,000	6	40,000	12	108,000	6	60,000
11.4	Consultants	50	526,000	15	157,800	20	210,400	15	157,800
11.99	Sub-total	122	1,150,000	33	277,800	56	534,400	33	337,800
13.0	Administration								
13.1	Adm. Officer <u>b/</u>		70,000		15,000		35,000		20,000
13.2	Researcher		60,000		15,000		30,000		15,000
13.3	Researcher		60,000		15,000		30,000		15,000
13.4	Secretary		39,000		9,000		20,000		10,000
13.5	Secretary		39,000		9,000		20,000		10,000
13.6	Secretary <u>a/</u>		39,000		9,000		20,000		10,000
15.0	Travel		160,000		65,000		80,000		15,000
15.99	Sub-total		467,000		137,000		235,000		95,000
16.0	Mission Costs		42,000		10,000		20,000		12,000
50.0	Miscellany								3,000
52.0	Reports		21,000		8,000		10,000		2,000
53.0	Sundry		20,000		8,000		10,000		
50.99	Sub-total		83,000		26,000		40,000		17,000
99	Project Total		1,700,000		440,800		809,400		449,800

a/ These posts will be recruited by UNDP and will be based initially at UNDP Headquarters in New York.

b/ 50% of estimated costs; remainder will be provided under the ongoing Energy Assessment Program.

*Chou*

## OFFICE MEMORANDUM

TO : Messrs. Masood Ahmed, EGYEA  
B. Chadenet, Consultant

DATE: April 28, 1983

FROM : Julian Bharier, Chief, EGYEA *JB*

SUBJECT : SENEGAL: Energy Assessment Report  
Discussion Mission - Terms of Reference

1. You will visit Dakar from May 1 to May 5 to discuss the Green cover draft of the above report with relevant officials of the Government of Senegal. During your mission, you should agree with the Government what updating or other changes need to be made to this draft so that it can be finalized in Blue cover immediately upon your return. You should also discuss with the Government the areas where follow-up technical assistance is likely to be required in the energy sector. You should determine whether some of this assistance should be provided under the joint Bank/UNDP Energy Sector Management Program.

2. During your mission, you will liaise with the Bank's Resident Mission and with the UNDP Resident Representative's office.

cc & cleared with in substance: Mr. de Raet (WA2)

cc: Messrs. Bouhaouala, Thiam (WAP); Palein (WA2), Bauer, Barbu, Rao, Wackman (EGY); Benjamin (Resident Representative, Senegal)

MAhmed:jl *(M)*



*Chiron,*

April 29, 1983

Julian:

Items To Follow-up Next Week

- Gambia: Should receive response from Government on my trip by Tuesday. Call me at Teranga either way by Wednesday.
- Kenya: Ken is finalizing Country Status Report to go out to Regions, IND, Front Office under Activity Competition Report cover. Draft telex to Government will be attached for comments. Should have a meeting on this with Programs and possibly Erkmen, Segura, by Tuesday before Ken comes.
- Zambia: Draft telex on ESMP is being cleared by Programs. Akin will follow-up and send off before his departure, but you might check by Wednesday.
- Burundi: -- I have cleared Fostvedt's memo and asked him to send me the TOR's for the three consultants. If OK, these will be attached to the memo of April 21 (copy attached) and issued as one activity initiation report.
- Re petroleum supply management. Draft TOR's have been sent to consultant (ORSATELLI) in London. Akin should call him by Tuesday to confirm whether he is able to proceed and when. Then we need to inform Government of these dates. I will issue AIR upon return.
- Bangladesh: Dale Hill's revised draft is expected today. Philippe/Nayyar/Pinard and Ansari should clear it before we let it go to Government. Ansari has pointed out that there are a number of errors in this draft which need to be fixed. We should hold off issuing on ACR until it is clear whether this report is going to Government or not.
- Malawi: If we get a cable from Wagner in the field, hold for my return.
- Noel: is working on Rwanda draft country status report and on sorting out the files.
- Ansari: is working on the Sri Lanka draft country status report.
- Indonesia: Sears is sending out today a cable explaining why we are not proceeding with Power Loss study now. I have cleared it. Beach is clearing it. You should get a copy. I have copied it to Mashler and Zincir.

Project Document: If we receive the original ESMP Project Document from New York, it has to go out with a covering memo to Legal (draft attached).

Other pending items:

- Memo to Wyss (with YRovani for signature)
- Memo to Senior Staff attaching copy of ESMP Project Document

Masood Ahmed

Attachments




Chron.

## OFFICE MEMORANDUM

TO: EGY Senior Staff

DATE: April 29, 1983

FROM: Julian Bharier, Chief, EGYEA 

SUBJECT: Energy Sector Management Program -  
Project Document

I am attaching for your information a copy of the above project document which has just been signed on behalf of the UNDP and the Bank.

Either Masood Ahmed or I will be happy to respond to queries you might have on the project document or on the Sector Management Program.

Attachment

MAhmed:jl

UNITED NATIONS DEVELOPMENT PROGRAMME

Interregional Project Agreement

Project Document

**Title:** UNDP/World Bank Energy Sector Management Programme - a Technical Assistance Programme linked to the Energy Sector Assessment Program  
**Duration:** 2 years  
**Starting Date:** April 1983

**Number:** INT/83/005/A 73/42

**Sector:** Energy

**Government Cooperating Agencies:**

To be identified in each of the participating countries.

**Date of Submission:** April 1983

**Executing Agency:** The World Bank

**Government Contribution:** (In kind--See Section IIG)

**UNDP Contribution:** \$1,700,000 (Energy Account)

**Approved:** *Yves Rovani*  
On behalf of Executing Agency  
Yves Rovani, Director  
Energy Department

**Date:** April 1, 1983

**Approved:** *William Burke*  
On behalf of the UNDP, Division for  
Global and Interregional Projects

**Date:** 6/4/83

**Approved:** *David Harland*  
On behalf of UNDP Energy Account

**Date:** 6 April 1983



## PART I

### Legal Context

1. This agreement will become effective when signed on behalf of the United Nations Development Programme and the World Bank. Cooperating arrangements with participating countries will be undertaken through exchange of letters at which time the respective Basic Agreement between Governments and the United Nations Development Programme shall take effect.

## PART II

### A. Development Objectives

2. The long term objective of the Energy Sector Management Programme, of which this project constitutes the initial phase, is to enable developing countries to successfully complete the transition to an era of high cost energy by strengthening their capability to plan and manage all types of energy projects within the framework of an integrated sector development strategy.

### B. Immediate Objectives

3. The immediate objective of the Energy Sector Management Programme (ESMP) is to provide timely and well focussed technical assistance to participating developing countries to help them implement a broad range of recommendations made by the Energy Sector Assessment Reports in four major areas: sector management, policy formulation and institutional strengthening; energy efficiency improvements; rural and renewable energy development; and manpower and institutional development.

4. The immediate objectives of this project are: (i) to review the technical assistance requirements in countries for which assessment reports have been completed or are under preparation and to identify how these requirements could be met from the various bilateral, multilateral and other agencies; (ii) to initiate ESMP operations in priority countries where such assistance is urgently required and has been requested by the Government; (iii) to evaluate actions which have been taken in the wake of the energy assessments and identify future work; and (iv) in light of the above, to prepare a detailed medium term work programme for the various components of the ESMP.

### C. Special Considerations

5. This project builds upon and is, in effect, defined by the results of the Energy Sector Assessment Programme which is being executed by the World Bank and financed jointly by the UNDP and the World Bank under the interregional project "Assessment of the Investment and Technical Assistance Needs in the Energy Sector." (Project INT/80/009).



D. Background and Justification

6. By the end of the 1970s most developing countries found that they had to deal with new and massive problems of adjustment in the energy sector. However, decisions on the substitution of imported oil by indigenous resources or other types of imported fuels were by no means easy to make. There were great uncertainties about domestic energy resource potential, about the types of technologies which could be adopted for the production, distribution and use of different fuels, about the availability and cost of finance for energy resource development and the time required to prepare and implement appropriate projects. Moreover, in most developing countries comprehensive energy sector management was in a rudimentary state. Basic information, for example, on demand patterns and growth, was poor, little of the preinvestment work necessary for effective decision making had been carried out and there was limited analysis of policy issues and of the mechanisms for coordinating the actions of the various users and producers of different types of energy. While many countries clearly needed to improve the efficiency of energy use there was little experience or technical capability in this area.

7. As a first step in response to this situation, the World Bank and the United Nations Development Programme in November 1980 jointly launched a 60-country Energy Sector Assessment Programme designed to provide a rapid diagnosis of the major energy problems faced by the developing countries and an evaluation of the options for solving these problems. Since the Programme began, 13 assessments have been completed, a further 12 are in various stages of preparation and 12 are planned to start in the next year.

8. The response to the Assessment Programme has been strong, with the number of requests to date from Government in excess of the 60 originally envisaged. Many Governments already have begun to use these reports to clarify their sector strategy and prepare solutions to major problems. The reports are also being used increasingly by many agencies to help them in developing their own assistance programmes for these countries.

9. The successful completion of a number of Energy Assessment Reports has highlighted the urgent need for follow up assistance to ensure that priority issues identified by these reports are in fact effectively addressed. This assistance falls into two broad categories. First, specific policy or investment options identified by the energy assessment reports frequently need to be analyzed in much greater detail before a final decision can be taken. Because of their essentially diagnostic nature, this detailed feasibility work cannot be incorporated into the assessment process itself but many countries nevertheless require assistance in carrying out these tasks. The second type of assistance that is being identified as having high priority relates to the strengthening of the institutional and management framework for the energy sector, particularly at the national level. In nearly all the countries where assessment missions have been fielded,



this assistance is likely to be a vital element in ensuring that complex, more diversified and much larger energy investment programs are successfully implemented. It will also be a necessary adjunct for developing effective energy demand management programs which span several fuels and user sectors.

10. Some of this assistance can be, and is being, provided by other donor agencies active in the field; indeed, one of the objectives of the assessment reports is to act as a catalyst in mobilizing such assistance. However, in a number of important areas additional effort is required because the existing mechanisms are either inadequate or not sufficiently flexible. A reflection of this is the increasing number of requests from countries where assessments have been carried out for the UNDP/Bank assessment team to continue to provide independent and objective policy and programme advice and support in helping to implement the recommendations of completed assessment reports. A few of these requests have been accommodated to date by reallocating resources from other UNDP/World Bank activities, but a growing file of requests from other countries cannot be financed from existing resources. The proposed ESMP, which is described more fully in a joint UNDP/World Bank brochure of November 1982, <sup>1/</sup> has been developed in response to this demonstrated need. The massive need for investment and the related planning and pre-investment work in the energy sector form the basic justification for the program and for the partnership of the UNDP and the World Bank in executing it.

#### E. Output

11. The output of the project, will essentially be the tangible impact in the countries involved in improved policies, investment plans and priorities, project preparation, energy efficiency, training programmes and institutional arrangements. In addition, the governments will receive two types of reports, as appropriate:

(i) project descriptions and pre-feasibility studies, including justification and terms of reference for feasibility studies and recommendations for further project preparation, financing and other actions; and

(ii) technical/management assistance studies including evaluation and recommendations on investment programmes, policy/institutional changes, further technical assistance programmes, and training programmes, with proposals for financing and other actions.

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1/ The Joint UNDP/World Bank Energy Sector Assessment Programme and Energy Sector Management Programme: A Progress Report. November 1982.

F. Activities

12. The full Energy Sector Management Programme comprises four major inter-related activities: (i) Energy Management Assistance Programme; (ii) Energy Efficiency Programme; (iii) Rural/Renewable Energy Programme; and (iv) Manpower and Institutional Development Programme:

(i) Energy Management Assistance Programme

13. This programme would enable the government to draw on Bank and/or UNDP staff resources, basically the same types of expertise as has been used in the assessment process, to help it strengthen the capability to effectively manage its energy sector and coordinate external assistance. If the government so requests, the process of helping the country could include:

- (a) assisting the government in improving its capacity for sector management through technical advice and support for the country's energy planning and management organization; technical assistance for establishing and maintaining an appropriate energy data base; and definition, preparation, supervision and evaluation of selected pre-feasibility studies and project proposals.
- (b) defining the specific requirements for technical assistance and pre-investment activities, including, e.g., the objectives, work plan and required inputs for both the government and external contributions in a format the government can use in discussion with official bilateral and multilateral financing agencies or with interested private investors;
- (c) assisting the government in developing a medium-term investment plan and an associated portfolio of project profiles for the major projects;
- (d) helping the government identify sources of finance, both public and private, for each of the follow-up activities identified during the assessment. This can include participating in meetings of aid consultative groups or UNDP Round Tables for the least developed countries, arranging special meetings or seeking financing through bilateral discussions with individual financing agencies;

(ii) Energy Efficiency Programme:

14. Improving the efficiency of energy use has substantial potential and high returns in almost all developing countries. An Energy Efficiency Programme has therefore been designed which would include:

- (a) assistance to governments in the establishment of a national energy efficiency capability, including manpower



development and institutional strengthening, the development of appropriate policies and programmes for managing energy demand and the implementation of energy audits in the industrial, transport and other sectors with the objective of identifying energy-saving opportunities and providing recommendations for achieving these.

- (b) assistance in preparing pre-feasibility studies of potential energy saving investments in economic subsectors where energy saving potential has already been identified. This includes a preliminary survey of the subsector to pinpoint the most promising energy conservation investment projects and the preparation of technical and economic pre-feasibility studies leading to the preparation of energy conservation investment projects for implementation by the appropriate financing sources.
- (c) Power System Loss Reduction. This would identify and quantify efficiency improvement requirements in electric power systems in countries which are willing to take steps to effectively reduce power system losses. Individual system improvement projects would be identified and subsequently prepared to the point where they would be suitable for financing by the World Bank, UNDP or other multilateral and/or bilateral institutions. Preparatory work for this component has already been financed from the UNDP Energy Account in 1982.

(iii) Rural/Renewable Energy Programme:

15. The energy assessment missions have emphasized the need for help in strengthening institutions, policies and practical programmes for new and renewable energy resources, particularly in the rural sector. In addition, a variety of pilot projects has been identified and these need to be evaluated and implemented before major investments can be made in renewable energy supply and conservation. These projects are relatively small-scale but heavy staff inputs are required for their preparation and supervision. While many donor agencies have expressed interest in providing funds for the projects themselves a mechanism is needed by which expert preparation and supervision resources can be provided to assess the performance of pilot projects and identify their investment potential, as well as to develop the necessary skills in the country to continue with this work. The proposed Rural/Renewable Energy Programme is designed to meet this need. It will cover activities flowing from the Assessment Programme and provide a focus for rural/renewable energy activities as well as a means of ensuring that experience gained in pilot projects is disseminated to all concerned countries. The criteria for involvement in specific pilot projects will be the Government's commitment to an appropriate institutional framework and to the potential follow-up investment as part of a national programme.



(iv) Manpower and Institutional Development Programme

16. The Assessment Programme and other work done by various UN agencies and the World Bank have identified a critical need for supporting manpower and institutional development in the energy sector. The other components of the Energy Sector Management Programme will address these problems in their relevant areas (sector management, energy efficiency, rural/renewable energy), and this integrated approach will be the most effective way to address certain specific training and institutional development needs. However, there are some types of needs that will not be fully covered in this way, and a supplemental manpower/institutional programme is therefore required.

17. This activity may include the following:

- diagnoses of organizational/managerial/manpower problems in key sector institutions with recommendations and preparation of terms of reference for further action;
- in-country training programmes to meet specific specialist needs (energy planning, energy economics, finance, technical specialities);
- workshops and seminars involving technical experts from various developing countries to exchange ideas and experience; -
- short-term external training courses in various specialities (technical, economic, etc.);
- secondment of key individuals to foreign energy sector institutions and financing agencies;

18. As shown in the following table the full scale operation of the Energy Sector Management Programme would entail a total resource allocation of \$6 million in 1983 rising to \$11 million by 1986 (all in 1982\$).

ENERGY SECTOR MANAGEMENT PROGRAMME  
ESTIMATED FINANCIAL REQUIREMENTS  
1983-86  
(\$ million in 1982 prices)

	1983	1984	1985	1985	TOTAL
Energy Management Assistance Programme	1.50	1.50	2.00	2.00	7.0
Energy Efficiency Programme	3.00	5.00	5.50	5.50	19.00
(industry, transport and major energy-using sectors)	(2.00)	(3.50)	(3.50)	(3.50)	(12.50)
(Power Loss-Reduction Project)	(1.00)	(1.50)	(2.00)	(2.00)	(6.50)
Rural/Renewable Energy Programme	1.00	1.50	2.50	3.00	8.00
Manpower and Institutional Development Programme	<u>0.50</u>	<u>0.50</u>	<u>0.50</u>	<u>0.50</u>	<u>2.00</u>
<b>TOTAL</b>	<b>6.00</b>	<b>8.50</b>	<b>10.50</b>	<b>11.00</b>	<b>36.00</b>



18. As the full extent of these resources has yet to be mobilized, UNDP and the World Bank propose to adopt a phased approach in developing the programme. This project document which covers the initial phase of the Program, would enable the operation to begin on a limited scale. It would allow the executing agency to recruit a core team of energy planners, economists or technical specialists for a two-year period and to respond to priority requests for assistance in some of the countries where assessments have been carried out or are under preparation (see Annex 1 attached). Detailed work programmes in each of these countries are being worked out in consultation with the governments and the UNDP resident representatives. These programs will take into account the recommendations of the assessment reports, the requests from Governments and the availability of potential financing sources. This project would also enable the preparation of a detailed work programme for the full scale operation of the Energy Sector Management Programme which would be used as a basis for discussion with potential donors who could contribute additional resources for financing these operations.

19. Although there are four broad "components" to the programme, it is an integrated programme to be managed as such, in the same manner as the Energy Sector Assessment Programme. This is essential to ensure that the program responds to priority needs in a flexible way, that progress is effectively monitored and that the quality of output is maintained.

G. Inputs

20. (a) Government Inputs: Each participating Government would be expected to provide appropriate counterpart staff for the consultants funded under the project and to carry out the preparatory work required (such as data collection and analysis, surveys, institutional studies, etc.). The Government would normally also provide office space, supplies, secretarial services and local transport for the effective operation of the project.

(b) UNDP Inputs: These would include:

- Three full time energy experts for a period of 24 months each. These would comprise an energy economist/planner, a technical specialist and a program/management officer. This last position will be recruited by UNDP and will be based initially at UNDP Headquarters.
- Fifty months of short-term consultants.
- A budget to cover travel and per diem costs for both the full-time experts and short-term consultants
- A budget to cover secretarial, administration and other direct costs associated with setting up the program.
- Details of these inputs are set out in the attached budget.

- (c) Donor Agency Input: These will be incorporated in the total Energy Sector Management Program as they become available, and the budget document attached as Annex 2 will be revised accordingly.

Sections H through M

(Not Applicable.)

PART III

21. A. Schedule of Reviews

The project will be subject to periodic reviews by UNDP and the World Bank, in accordance with the UNDP's established policies and procedures.

B. Evaluation

The project will be subject to evaluation in accordance with UNDP's established policies and procedures.

C. Progress and Terminal Reports

The Bank will submit to UNDP semi-annual progress reports and a terminal report upon completion of the project, as well as reports of all country specific activities funded under the project as they become available.



ANNEX I

The Joint UNDP/World Bank Energy Assessment Programme

Assessments Completed Since Nov. 1980	Assessments in Progress
Bangladesh	Benin
Burundi	Bolivia
Haiti	Ethiopia
Indonesia	Fiji
Kenya	Morocco
Malawi	Nepal
Mauritius	Niger
Papua New Guinea	Nigeria
Rwanda	Peru
Sri Lanka	Senegal
Turkey	Solomons
Zambia	Sudan
Zimbabwe	Togo
	Uganda
	Yemen A.R.

4/1/83

PROJECT BUDGET COVERING THE UNDP CONTRIBUTION (IN U.S. DOLLARS)

Country : INTERREGIONAL  
 Number : INT/83/005  
 Title : Energy Sector Management Program

				CY83		CY84		CY85	
		SM	TOTAL	SM	TOTAL	SM	TOTAL	SM	TOTAL
10.0	Personnel								
11.1	Energy Expert	24	208,000	6	40,000	12	108,000	6	60,000
11.2	Energy Expert	24	208,000	6	40,000	12	108,000	6	60,000
11.3	Program Management <u>a/</u>	24	208,000	6	40,000	12	108,000	6	60,000
11.4	Consultants	50	526,000	15	157,800	20	210,400	15	157,800
11.99	Sub-total	122	1,150,000	33	277,800	56	534,400	33	337,800
13.0	Administration								
13.1	Adm. Officer <u>b/</u>		70,000		15,000		35,000		20,000
13.2	Researcher		60,000		15,000		30,000		15,000
13.3	Researcher		60,000		15,000		30,000		15,000
13.4	Secretary		39,000		9,000		20,000		10,000
13.5	Secretary		39,000		9,000		20,000		10,000
13.6	Secretary <u>a/</u>		39,000		9,000		20,000		10,000
15.0	Travel		160,000		65,000		80,000		15,000
15.99	Sub-total		467,000		137,000		235,000		95,000
16.0	Mission Costs		42,000		10,000		20,000		12,000
50.0	Miscellany				8,000		10,000		3,000
52.0	Reports		21,000		8,000		10,000		2,000
53.0	Sundry		20,000		8,000		10,000		2,000
50.99	Sub-total		83,000		26,000		40,000		17,000
99	Project Total		1,700,000		440,800		809,400		449,800

a/ These posts will be recruited by UNDP and will be based initially at UNDP Headquarters in New York.

b/ 50% of estimated costs; remainder will be provided under the ongoing Energy Assessment Program.



*chou*

# OFFICE MEMORANDUM

TO: Mr. Hans Wyss, EAP

April 27, 1983

FROM: Yves Rovani, Director, Energy Department

SUBJECT: Energy Sector Management Program Activities in the Eastern Africa Region

Further to our recent discussion, I am attaching for your information a note listing the ongoing and planned technical assistance activities being financed under the Energy Sector Management Program in the Eastern Africa Region. In addition to these activities, the Energy Assessments and Management Division is, as you know, executing an Energy Planning Technical Assistance Project for the UNDP in Mauritius.

cc: Messrs. Bronfman, Rao, Bharier

MAhmed:cra

Energy Sector Management Program  
Ongoing and Planned Activities

East Africa

Uganda

Petroleum Import Arrangements Assessment Mission endorsed urgent Government request for assistance in rationalizing procedures and documentation for imports of petroleum products by private marketing companies. This was subsequently provided through a three-week mission (from January 26 to February 12, 1983) by a consultant expert (Ogmen). The results of his work are being summarized in an Activity Completion Report to be issued in May.

Sudan

Management Information System At the request of the Minister of Petroleum, endorsed by the Assessment Mission, a consultant (Ansari) visited Sudan from February 22 - April 1, 1983 to help establish a data reporting and monitoring system which would enable the senior policymakers in the Ministry to take prompt and informed decisions on key sector issues. This work has also identified the need for a clearer definition of the functions of different departments in the Ministry. The results of this work are being incorporated in the draft Energy Assessment Report. A more detailed Activity Completion Report will also be issued in early May.

Kenya

Country Status Report A staff mission (Newcombe) has just returned from Nairobi and its report will be issued next week. This mission has evaluated the progress made in implementing the various policy, investment and institutional recommendations made in the Energy Assessment Report, which was discussed with the Government about a year ago. The Country Status Report will also identify those areas where further technical assistance is necessary to help implement the Assessment recommendations.

Malawi

Subsequent to the the Assessment Mission the Government has requested follow-up assistance in two areas:

Efficiency Improvements in the Tobacco Industry

Draft terms of reference for a consultant study to evaluate the various technical options for improving the efficiency of wood use in the tobacco industry has been prepared and are being discussed with the Government by a Forestry mission (Wagner). Suitable candidates are being identified for a mission tentatively scheduled for May/June 1983.



## Institutional Arrangements for Energy Planning

The Government is preparing draft terms of reference and scope of responsibilities for the recently created Energy Unit in the Economic Planning Division. ESMP finance is likely to be required to assist the Government in finalizing these proposals and in defining their resource and manpower requirements. More extensive technical assistance would be needed to strengthen the energy planning unit in its initial operations; this may be provided under the Technical Assistance loan associated with the proposed SAL.

### Burundi

Petroleum Supply Management The Government has requested assistance to review the existing arrangements for imports of petroleum products and to evaluate alternative mechanisms and routes. Draft terms of reference for this task have been agreed with the Government. A potential candidate has been identified and is scheduled to visit Burundi in May/June.

Negotiations with Private Oil Companies During his recent visit to the Bank, the Minister of Energy asked for urgent assistance to help the Government prepare for its forthcoming negotiations with a private oil company on exploration activity in Burundi. Terms of Reference for this work are being prepared and consultants in the areas of petroleum exploration, negotiations and cross border unitization are being identified. The assistance is likely to be provided over the next three months and will fill an important gap until larger funds are made available under the proposed Third Technical Assistance Project (due to go to the Board in September 1983).

### Zimbabwe

Power Loss Reduction A mission (Sears et al) visited Zimbabwe in November 1982 to evaluate the potential for reducing losses in the electric power distribution network. The mission has identified substantial savings that could be realized in the short and medium term. Their draft report was circulated in February 1983 for comments and is now being finalized.

### Other Countries


ESMP Assistance is also likely to be provided to Rwanda and Zambia during the coming 3-6 months; the scope of work in each country is being defined.

Crown

## OFFICE MEMORANDUM

TO: Mr. Ernest Stern, SVPOP

DATE: April 27, 1983

FROM: Yves Rovani, EGYDR SUBJECT: OMVS

1. Regarding your question on the use of \$150,000 from the Energy Sector Management Program for OMVS.
2. The note from West Africa which you saw did not incorporate our views. What we counter proposed, and they have since agreed is a two phase approach. The first stage, which would cost about \$50,000 and would be financed from the ESMP, will determine whether there is a prima-facie case for supplying electric power to Senegal from the Manantali dam in Mali, as an alternative to coal or peat-fired plants in Senegal.
3. If the case is made, this study would be followed by a more detailed feasibility study costing about \$0.5 million, which would be financed from other sources. The ESMP financed study would ensure that the TORs and scope of work for this larger study were well defined.
4. I think this is a valuable and fully justified use of ESMP funds as seed money.

MAhmed:cra



*Chon*

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Box!

PAGE

OF

EXTENSION

MESSAGE NUMBER

TEST NUMBER  
(FOR CASHIER'S USE ONLY)

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TO:

INTBAFRAD DAKAR, SENEGAL. FOR DE ~~REACT~~. RE  
 ENERGY SECTOR MISSION. FURTHER TO GOS TELEX OF APRIL 15 AND  
 BENJAMIN'S TELEPHONE CONVERSATION WITH MR. LI ON APRIL 18, THIS  
 IS TO CONFIRM THAT CHADENET AND MYSELF NOW PROPOSE TO ARRIVE IN  
 DAKAR ON MAY 1ST FOR DISCUSSIONS OF ENERGY ASSESSMENT REPORT ON  
 MAY 2 - 4. CHADENET WILL DEPART WEDNESDAY NIGHT BUT I COULD  
 STAY ON FOR THURSDAY IF NECESSARY. PLEASE INFORM MR. FALL,  
 DR. OF ENERGY, AND OTHER GOS OFFICIALS AS APPROPRIATE. IT WOULD  
 BE USEFUL IF MR. FALL COULD OBTAIN PRELIMINARY COMMENTS ON THE  
 REPORT FROM CONCERNED AGENCIES PRIOR TO OUR ARRIVAL BUT THIS IS  
 NOT ESSENTIAL. GRATEFUL IF YOU COULD CONFIRM PROPOSED ARRANGEMENT  
 BY PHONE/TELEX AS SOON AS POSSIBLE AND ALSO LET ME KNOW WHETHER  
 YOU WILL STILL BE ABLE TO PARTICIPATE IN THESE DISCUSSIONS.  
 REGARDS, AHMED, ENERGY DEPARTMENT.

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END  
OF  
TEXT

NOT TO BE TRANSMITTED

CLASS OF SERVICE:

FR/TEEEX

TELEX NO.:

962-3149

DATE:

4/22/83

SUBJECT:

DRAFTED BY:

*Mahmed:cra*

CLEARANCES AND COPY DISTRIBUTION:

AUTHORIZED BY (Name and Signature):

*Julian Bharier*  
Julian Bharier, Chief

DEPARTMENT:

ENERGY

SECTION BELOW FOR USE OF CABLE SECTION

CHECKED FOR DISPATCH

Chron

FORM NO. 75  
(9-78)

THE WORLD BANK

ROUTING SLIP		DATE:
NAME		April 22, 1983
Messrs. Hall, Newcombe,		ROOM NO.
Terrado		
APPROPRIATE DISPOSITION	NOTE AND RETURN	
APPROVAL	NOTE AND SEND ON	
CLEARANCE	PER OUR CONVERSATION	
<input checked="" type="checkbox"/> COMMENT	PER YOUR REQUEST	
FOR ACTION	PREPARE REPLY	
INFORMATION	RECOMMENDATION	
INITIAL	SIGNATURE	
NOTE AND FILE	URGENT	
REMARKS:		
FROM: Masood Ahmed	ROOM NO.: D449	EXTENSION: 74545



DRAFT  
MAhmed:cra  
4/22/83

TO:

DATE: April 22, 1983

FROM: Masood Ahmed, EGYEA

SUBJECT: Evaluation of Alternative Technical Packages for Improving the Efficiency of Wood Use in the Tobacco Industry--Terms of Reference

1. You will visit Malawi for approximately three weeks beginning May \_\_\_ to carry out the field work for the above assignment. Prior to your departure you will spend two days at the World Bank reviewing the background material on this subject and for discussions with the relevant Bank staff. Upon your return from Malawi you should prepare a draft report of your findings by \_\_\_\_\_ and a final report incorporating Bank staff comments by \_\_\_\_\_.

2. The principal objectives of your assignment are as follows:

- (i) to prepare a comprehensive inventory of the various technical packages that could be used to improve the efficiency of energy use in the tobacco industry in Malawi;
- (ii) to compare these alternatives in terms of investment cost, likely savings, lead time for implementation, ease of administration, degree of commercial readiness, etc.;
- (iii) to recommend a costed and scheduled program of action, based on the above; this should include the preinvestment and investment work required to achieve

these savings, the associated manpower and institutional requirements and any experimental or pilot projects needed to further evaluate specific technical options which are not fully tested yet.

3. In carrying out this assignment you should take account of the following background information.

Background

4. Tobacco curing accounts for an estimated 40 percent of Malawi's fuelwood consumption. There is now considerable evidence to indicate that the volume of wood consumed by the tobacco industry could be dramatically reduced through measures to improve the efficiency with which wood is burned in this industry. While energy savings are possible in both flue-cured and fire-cured tobacco production, the immediate potential appears to lie in the former area where considerable preparatory work has been done in the country and where improved practices in neighboring countries can be most easily applied. Estimates of the potential savings that could be realized in wood consumed by flue-cured tobacco curing range from 30 to 50 percent through low cost investments and better housekeeping measures alone. The importance of achieving these savings is enhanced by the growing national fuelwood shortage and by the fact that programs to improve the efficiency of wood use in the household sector (the other major wood user) are likely to be more difficult and time consuming to implement.

5. Considerable work has already been done in Malawi to develop various technical packages for improving the energy efficiency of tobacco barns. In 1977-78, the Tropical Products Institute carried out a series




of tests in the Kasungu Flue-Cured Tobacco Estates which confirmed that wood consumption could be reduced to 0.02-0.03 m<sup>3</sup> for kg of cured tobacco. (This compares with a national average of \_\_\_\_\_ m<sup>3</sup> per kg and the least efficient barns consume as much as 0.13 m<sup>3</sup> per kg). More recently, the Tobacco Research Authority (TRA) has carried out tests using low cost improvements, such as better grates and chimneys, which also show similar results. The TRA is also working on improved flue designs to achieve better heat transfer which could result in further savings. The Government has also received a proposal for the use of solar crop drying in tobacco barns and there are likely to be other technical options which can be used for this purpose.

6. However, before a large scale program of energy efficiency improvements can be developed, it is necessary to compile and evaluate these various technical options whose costs, benefits and state of readiness vary widely. It is likely that a phased program will be most appropriate. Initially, the emphasis could be on low cost measures which have already been tested extensively and whose primary objective would be to bring the efficiency of the below average barns to the level of the more efficient ones. More fundamental design and technology changes could be implemented in a second phase particularly if there are still some technical or economic uncertainties associated with some of them. In that event, any further work needed to resolve these uncertainties should be carried out during the first phase in parallel with the implementation of the texted low cost measures. Preparing a detailed, costed program of action covering these steps is the principal purpose of this assignment.

## OFFICE MEMORANDUM

TO: Mr. Julian Bharier, Chief, EGYEA      Date: April 21, 1983

FROM: Masood Ahmed 

SUBJECT: Masood Ahmed: Work Program for May 1983 - April 1984

1. As we agreed, I am setting out below my work program for the next twelve months.

Primary Objective

2. My primary responsibility during the coming year will be to develop and implement the Energy Sector Management Program. This will entail the following tasks:

- (i) Develop an ESMP work program for the rest of calendar 1983.
- (ii) Review the status of ongoing TA activities being carried out by the Division and "regularize" them into the ESMP format.
- (iii) Establish operating procedures for the ESMP.
- (iv) Develop reporting and monitoring tools both for intra-divisional use and for Departmental and regional review of the Program (as set out in the draft Director's memo on this subject).
- (v) Define staffing requirements for program implementation and help to identify suitable candidates.
- (vi) Supervise the establishment of a roster of consultants that will be used for the program.
- (vii) Supervise the staff and consultants who are allocated to this program. Initially the professional staff who will work primarily on the ESMP are Messrs. Gaskin (energy efficiency), Moore (electric power) and Newcombe (renewables/management assistance, from 8/83). A petroleum supply/marketing specialist will be recruited for the program as soon as funds are available and a suitable candidate is identified. Two operational-/research assistants will also be allocated to the program.
- (viii) Assist you in soliciting additional finance for the program from potential donors, liaising with UNDP on the operations of the program and defining the roles that UNDP Headquarters and Resident Representatives will play in the implementation of the ESMP.



Secondary Objectives

3. In addition to the above, I will be responsible for supervising the Mauritius Technical Assistance Project and for completing the Senegal Energy Assessment report. I will also participate in the dissemination of the Energy Policy Paper through participation, for example, in 2-3 seminars or conferences.

Training

4. During the year I plan to take the initial and advanced corporate finance courses offered at the Bank. I also intend to take a refresher course in French to maintain operational status in Francophone countries.

Cleared with and cc: Mr. Rao

cc: Messrs. Rovani, Wackman

MAhmed:cra



# Record Removal Notice

<b>File Title</b> Masood Ahmed - Chronological File - January to June 1983		<b>Barcode No.</b>  1540569		
<b>Document Date</b> 4/19/1983	<b>Document Type</b> Letter, CV			
<b>Correspondents / Participants</b> To: Hans Mehlretter From: Masood Ahmed				
<b>Subject / Title</b> Mr. J. Bodelle				
<b>Exception(s)</b> Personal Information				
<b>Additional Comments</b>		<p>The item(s) identified above has/have been removed in accordance with The World Bank Policy on Access to Information. This Policy can be found on the World Bank Access to Information website.</p> <table border="1"><tr><td><b>Withdrawn by</b> Bertha F. Wilson</td><td><b>Date</b> November 2022</td></tr></table>	<b>Withdrawn by</b> Bertha F. Wilson	<b>Date</b> November 2022
<b>Withdrawn by</b> Bertha F. Wilson	<b>Date</b> November 2022			



FORM NO. 75  
(9-78)

THE WORLD BANK

ROUTING SLIP		DATE:
		April 19, 1983
NAME		ROOM NO.
Mr. E. Stern		E-1227
APPROPRIATE DISPOSITION	NOTE AND RETURN	
APPROVAL	NOTE AND SEND ON	
<input checked="" type="checkbox"/> CLEARANCE	PER OUR CONVERSATION	
<input checked="" type="checkbox"/> COMMENT	PER YOUR REQUEST	
FOR ACTION	PREPARE REPLY	
INFORMATION	RECOMMENDATION	
INITIAL	SIGNATURE	
NOTE AND FILE	URGENT	
REMARKS:		
Draft President's Memorandum for the Energy Policy Paper.		
FROM: M. Ahmed	ROOM NO.: D449	EXTENSION: 74545

April 19, 1983

FROM: The President

THE ENERGY TRANSITION IN DEVELOPING COUNTRIES

1. The last comprehensive report on this subject, Energy in the Developing Countries, was reviewed by the Executive Directors in July 1980. Since then, the developing countries and the Bank have gained valuable additional experience in energy. The Bank's activities in the sector have also expanded substantially. Energy lending has doubled since FY1979 and there has been a much sharper increase in oil and gas. In parallel, under the joint UNDP/Bank Energy Assessments Program, missions have been fielded in over 30 countries and a follow up Energy Sector Management Program has been launched to assist governments in implementing the recommendations of the energy assessment reports. The lessons learned in the course of this operational involvement form the basis of the analysis and conclusions contained in this report.

2. This analysis confirms that despite the recent drop in oil prices, the Bank should continue to accord a high priority to the energy sector in its overall program. Accelerating domestic production of energy and programs to use energy more efficiently will be an essential feature of the overall process of structural adjustment in the developing countries and will lay the basis for their sustained economic growth. The successful completion of the adjustment process in the energy sector will entail a major increase in the allocation of investable funds to the sector, both for energy production projects and for retrofitting programs to conserve energy. The report estimates that, over the next decade, the developing countries will need to invest about \$130 billion per year in the energy sector, about half of it in foreign exchange. This represents a major expansion over the current level of external financial flows to the energy sector in developing countries and it underlines the urgency of expanding these flows from all sources--public and private, debt and equity. A concomitant effort to strengthen the management and institutional framework for the energy sector will also be necessary in most developing countries.

3. The Bank has an important contribution to make in assisting developing countries overcome the resource and managerial constraints in the energy sector. Bank financing plays an important catalytic role by attracting other investors and lenders to participate in high priority, economically sound and financially attractive projects. More importantly, the report demonstrates the wider catalytic role that the Bank plays in the countries themselves--in terms of policy advice, institutional strengthening, technology transfer and improved project selection, design and implementation. As shown in this paper, the scope



and the need for Bank involvement in this vital sector are both great. Consequently, we propose to continue with a large and diverse program of energy activities, within the constraints of overall resource availability and the guidelines on sector allocation that have been agreed by the Board.

A. W. Clausen  
President

Attachments

OK to print.

For AWC.

Signature

*E. Howard*

4/19/83

(minor change on  
p. 2)



April 19, 1983

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A. W. Clausen  
President

Attachments



Chow

# OFFICE MEMORANDUM

TO: Mr. Radan, Print Shop, ADM  
FROM: Masood Ahmed, EGYEA   
SUBJECT: Request for Overtime

DATE: April 18, 1983

Please arrange for overtime to be done in order to print the Energy Policy Paper. We will accept charges for this work.


cc: Mr. D.C. Rao (EGY)

Chron

## OFFICE MEMORANDUM

TO: Mr. O. Rahkonen, Secretary's Department

DATE: April 18, 1983

FROM: Masood Ahmed, EGYEA SUBJECT: Energy Policy Paper

Attached please find the final version of the above paper for printing and distribution to the Board.

I will send you tomorrow a marked-up copy of the paper identifying the changes made to the March 1st draft which is being translated.

I would be grateful if we could look at a proof version of the Gray cover before all copies are printed.

I am sending a separate memo to Print Shop authorizing overtime for this job.

cc: Mr. D.C. Rao



Chron

## OFFICE MEMORANDUM

TO: Mr. Ken Newcombe

DATE: April 16, 1983

FROM: Masood Ahmed, Acting Chief, EGYEA

SUBJECT: KENYA: Country Status Report Mission

You will arrive in Nairobi on or by April 18 for one week of discussions with government, UNDP and World Bank staff leading to a review of progress made by GOK in implementing the recommendations of the Kenya Energy Assessment report.

As part of this review process, you will determine a framework for further technical assistance and prefeasibility work in line with the recommendations of the Energy Assessment, some of which may be financed under the Energy Sector Management Program.

Cleared with and cc: Mr. D. Thomas (EAL); Mr. J. Bharier (o/r) (EGY).

Chron

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TO:

MR. BERNARD RUSSELL, WORLD BANK GUEST, MANILA  
HOTEL, MANILA, PHILIPPINES. GOVERNMENT OF SENEGAL HAS REQUESTED  
ASSESSMENT MISSION BE POSTPONED. PLEASE CALL ME ON MONDAY, APRIL  
18 FROM LONDON SO WE CAN DISCUSS ALTERNATIVE PLANS. MASOOD AHMED,  
ENERGY DEPARTMENT, WORLD BANK.

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CLASS OF SERVICE: **FR/Telex**

TELEX NO **63496**

DATE: **4/14/83**

SUBJECT:

DRAFTED BY:

**MAhmed:cra**

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AUTHORIZED BY (Name and Signature):

**Julian Bharier, Chief**

DEPARTMENT:

**ENERGY**

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TO:

**BOOK OF TWO:**

**MR. M. ESSEX**

**DEPARTMENT OF FINANCE**

**PAPUA NEW GUINEA      TELEX NO. NE22218 VIA ITT.**

**MR. D. CRAIG**

**DEPARTMENT OF MINERALS AND ENERGY**

**PAPUA NEW GUINEA      TELEX NO. NE2221.**

**MR. S. NEMMARE**

**RESIDENT REPRESENTATIVE**

**UNDP**

**P.O. BOX 3041**

**PORT MORESBY**

**PAPUA NEW GUINEA      TELEX NO. 22197**

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CLASS OF SERVICE:

TELEX NO.:

DATE:

**4/12/83**

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TO: THANK YOU FOR YOUR TELEX OF APRIL 6 ABOUT TECHNICAL ASSISTANCE FOR ENERGY PLANNING. WE ARE PLEASED TO INFORM YOU THAT THE JOINT WORLD BANK/UNDP ENERGY SECTOR MANAGEMENT PROGRAM IS NOW OPERATIONAL, AND UNDER IT WE ARE ABLE TO PROVIDE A LIMITED AMOUNT OF TECHNICAL ASSISTANCE ON A GRANT BASIS TO ASSIST MEMBER GOVERNMENTS IN IMPLEMENTING THE RECOMMENDATIONS OF THE ENERGY ASSESSMENT REPORTS. TO ASSIST IN DEFINING THE SCOPE OF TECHNICAL ASSISTANCE TO BE PROVIDED UNDER THE ENERGY SECTOR MANAGEMENT PROGRAM WE PROPOSE THAT DR. PRASAD AND MR. AHMED (ECONOMIST IN THE ENERGY ASSESSMENT DIVISION) VISIT PORT MORESBY IN THE LAST WEEK OF MAY. WHILE IN PORT MORESBY THEY WILL ALSO PREPARE A BRIEF STATUS REPORT ON PROGRESS MADE IN IMPLEMENTING THE RECOMMENDATIONS OF THE ASSESSMENT REPORT FOR THE BENEFIT OF POTENTIAL DONOR AGENCIES. PLEASE CONFIRM IF PROPOSED MISSION TIMING IS CONVENIENT. IN VIEW OF THEIR INTEREST IN THIS MATTER I AM COPYING THIS TELEX TO MR. NEMMARE, THE UNDP RESIDENT REPRESENTATIVE. REGARDS, JULIAN BHARIER, ENERGY DEPARTMENT, WORLD BANK.

END  
OF  
TEXT

NOT TO BE TRANSMITTED

CLASS OF SERVICE: **FR/TELEX** TELEX NO.: **SEE COVER PAGE** DATE: **4/13/83**

SUBJECT:	DRAFTED BY: <b>MAHMED:cra</b>
CLEARANCES AND COPY DISTRIBUTION: cc and cleared with: Messrs. Cordukes, Tsantis	AUTHORIZED BY (Name and Signature): <b>Julian Bharier</b>
	DEPARTMENT: <b>ENERGY</b>
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## OFFICE MEMORANDUM

April 6, 1983

TO: Messrs. Yves Rovani, Director and D. C. Rao,  
Asst. Director, EGY

FROM: Julian Bharier, Chief, EGYEA *JB*

SUBJECT: Operational Principles and Processes for the Energy Sector  
Management Program

1. This note sets out the principles and processes that will be used as an initial guide to the operations of Energy Sector Management Program (ESMP).

Principles

2. ESMP operations will be based on four principles designed to ensure a quick and flexible response to Government requests for assistance under the ESMP within an agreed overall framework of priorities for each country:

- (i) The programming unit for all ESMP activities will be "the country".
- (ii) ESMP activities will only be in countries where an energy assessment has been carried out.
- (iii) The assessment process will produce an agenda of energy sector technical assistance and pre-feasibility requirements in each country, which will be the framework for programming ESMP activities in that country.
- (iv) Once this agenda has been agreed with the government, the selection of individual technical assistance activities under the ESMP will be based in general on the following criteria:
  - a. relative priority of the activity to be undertaken;
  - b. likely impact of the activity in the country; and
  - c. availability and timeliness of other sources of finance for the activity. .

Since the total number of requests are, and are likely to continue to be, far in excess of the funds available to the ESMP, and since the extent of these funds, at least in the first few months of the program, is uncertain, there will need to be "tailoring" of selected activities during this period to ensure that there is a country and activity balance among them.

### The Process

3. Assuring the quality and relevance of the assistance provided under the ESMP as well as monitoring its overall implementation, requires both a clearly defined operational process and an established review procedure at each stage. There are essentially three dimensions to this quality control function. First, to ensure that the activities financed by the Program are in accordance with the needs and priorities of the country. Second, to ensure that the quality of assistance provided under each specific activity funded by the program is of a satisfactorily high standard. And, third to ensure that the ESMP as a whole is being implemented effectively and at an agreed pace. These points are dealt with below.

4. (i) Selection of Activities: The identification of technical assistance and pre-feasibility requirements for each country will be a feature of its Energy Assessment Report. Green Cover Assessment reports will include a draft list of these requirements, which will be discussed with the Government and updated at the time of Green Cover discussions. The Back-to-Office report of the Green cover discussion mission will also identify any priority items on this list for which ESMP finance has been requested by the Government and which in the mission's view need to proceed urgently. This Back-to-Office report will be circulated to the EGY front office and to other concerned departments for their information/comments.

5. The other items on the list of technical assistance requirements may be picked <sup>up</sup> through a variety of mechanisms, including bilateral or other multilateral agencies, components of Bank projects or Government resources. Experience has shown that this matching process takes between six and twelve months from the distribution of the Blue Cover Assessment report. Thus, approximately 12 months after the Green Cover discussion mission, a status report will be prepared for each country to record the progress made since the assessment mission. This Country Status Report will list all the policy, investment and technical assistance recommendations made by the assessment and describe what progress has been made on each of them over the intervening period. For the technical assistance recommendations, for example, the Country Status Report would identify which of them had been carried out (and how), which were in the process of being carried out and which remained to be followed through. The report would also list any new requirements identified during the post-Assessment period, and would thus provide the basis for any further ESMP activities. This Country Status Report would be circulated for comments to the EGY Front Office and to Regional staff (who may also be involved in its preparation).

6. (ii) Quality Control of Each Activity: Each activity financed through the ESMP will be evaluated ex-post through the preparation and review of an Activity Completion Report. This report will set out the objectives of the particular activity, how it had been carried out and how effective it had proved to be. Wherever possible, an evaluation of the relevance/quality of the assistance by the host Government would be



included. As most activities financed under the ESMP would have a short duration (under six months), only one report would be issued upon completion. However, if an activity were envisaged to last much longer, interim activity evaluation reports would be issued every six months. As individual ESMP activities are expected to cost less than \$150,000, ex-post monitoring should be adequate. However, where a larger and more complex activity was proposed, an activity initiation report would be issued and discussed prior to beginning work on the operation. Moreover, the status of all ongoing activities would be listed in the bi-monthly ESMP progress report discussed below.

7. (iii) Monitoring Program Implementation: The third aspect of quality control is to monitor the progress of the ESMP as a whole against pre-agreed targets. This will be done in the following ways. An annual work program will set out the broad levels of activities envisaged for each functional category in the program (conservation, institutional strengthening, rural/renewable, country status reports, etc.). This annual program will obviously need to be fairly flexible and general to accommodate specific requests for assistance which may arise during the course of the year. Therefore, it will be supplemented by a bi-monthly progress report which will list the status of all ongoing activities under the program as well as planned activities for the next quarter. This bi-monthly report will be reviewed by the EGY Front Office [and it will also be circulated to regional managers].

8. Finally, an annual progress report will be prepared describing the implementation of the ESMP over the preceding 12 months and identifying any problem areas or lessons learned. This annual report will also set out the progress made in each of the functional categories of the ESMP. This report could be used as a basis for any external progress reports which are required by UNDP or other donors into the program.

9. The various outputs that will be produced under the Program are summarized in an attachment to this note.

#### Application to Existing Activities

10. While the above procedures will be followed for future operations under the ESMP, there are already a number of activities at various stages of implementation whose status needs to be regularized. Moreover, developing a comprehensive work program for calendar 1983 is difficult until the expected level of funding is clarified during the next two to three months. Thus the immediate focus for programming ESMP operations will be to develop a tentative work program based on the existing resources (\$1.7 million) and to prepare a status report on all existing or currently scheduled operations.

Attachment:

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SUMMARY OF ESMP "OUTPUTS"

Output	Timing	Distribution	Coverage
<u>Country Specific</u>			
Draft list of Technical Assistance Requests	As part of Green Cover Assessment Report	EGY Front Office Regions/other concerned Depts., UNDP Government	Identifies all the technical assistance activities required to implement policy and preinvestment recommendations of assessment.
Revised list of Technical Assistance Requests	Following Green Cover Assessment Discussions	EGY Front Office Regions/other Depts., UNDP	BIO of Green Discussion Mission will produce an updated list of TA requirements which has been discussed with Government. BIO will also identify any priority activities which need to begin urgently and which Government has requested under ESMP.
Identification of Priority T.A. for ESMP	Following Green Cover Assessment Discussions	EGY Front Office Regions/other Depts., UNDP	
Country Status Report	12 months after Green Cover Assessment Discussion	EGY Front Office Regions/other Depts., UNDP	Will review progress on major recommendations made by the assessment report; identify those technical assistance requests which remain to be picked up and any new ones which may have emerged in the intervening period.
Activity Completion Report	Upon completion of each activity financed by ESMP	EGY Front Office Regions/other Depts., UNDP, other Donors <u>1/</u>	Will set our objectives of the activity, how carried out and evaluation of its effectiveness.
Interim Activity Evaluation Report	Every 6 months after beginning a specific activity	EGY Front Office Regions/other Depts., UNDP	Will be issued for only those activities which extend over six months.
Activity Initiation Report	Prior to embarking on activities	EGY Front Office	Will be issued only for individual activities likely to cost over \$200,000.



Output	Timing	Distribution	Coverage
<u>Country Specific</u>			
Bi-monthly Status Report	bi-monthly	EGY Front Office Regions	Lists status of all ongoing and planned activities under the program.
Annual Work Program	annual	EGY Front Office only	Lists broad levels of operations envisaged for each functional category of the ESMP and for program as a whole.
Annual Progress Report	annual	EGY Front Office Regions/other Depts., UNDP, Donor Countries	Describes progress made on implementing program during preceeding year. Lessons learned, etc.





MA's copy  
*Chiron*

UNITED NATIONS DEVELOPMENT PROGRAMME

Interregional Project Agreement

Project Document

**Title:** UNDP/World Bank Energy Sector Management Programme - a Technical Assistance Programme linked to the Energy Sector Assessment Program  
**Duration:** 2 years  
**Starting Date:** April 1983

**Number:** INT/83/005/A 73/42

**Sector:** Energy

**Government Cooperating Agencies:** To be identified in each of the participating countries.

**Date of Submission:** April 1983

**Executing Agency:** The World Bank

**Government Contribution:** (In kind--See Section IIG)

**UNDP Contribution:** \$1,700,000 (Energy Account)

**Approved:** *Yves Rovani*  
On behalf of Executing Agency  
Yves Rovani, Director  
Energy Department

**Date:** April 1, 1983

**Approved:** \_\_\_\_\_  
On behalf of the UNDP, Division for  
Global and Interregional Projects

**Date:** \_\_\_\_\_

**Approved:** \_\_\_\_\_  
On behalf of UNDP, Energy Account

**Date:** \_\_\_\_\_

## PART I

### Legal Context

1. This agreement will become effective when signed on behalf of the United Nations Development Programme and the World Bank. Cooperating arrangements with participating countries will be undertaken through exchange of letters at which time the respective Basic Agreement between Governments and the United Nations Development Programme shall take effect.

## PART II

### A. Development Objectives

2. The long term objective of the Energy Sector Management Programme, of which this project constitutes the initial phase, is to enable developing countries to successfully complete the transition to an era of high cost energy by strengthening their capability to plan and manage all types of energy projects within the framework of an integrated sector development strategy.

### B. Immediate Objectives

3. The immediate objective of the Energy Sector Management Programme (ESMP) is to provide timely and well focussed technical assistance to participating developing countries to help them implement a broad range of recommendations made by the Energy Sector Assessment Reports in four major areas: sector management, policy formulation and institutional strengthening; energy efficiency improvements; rural and renewable energy development; and manpower and institutional development.

4. The immediate objectives of this project are: (i) to review the technical assistance requirements in countries for which assessment reports have been completed or are under preparation and to identify how these requirements could be met from the various bilateral, multilateral and other agencies; (ii) to initiate ESMP operations in priority countries where such assistance is urgently required and has been requested by the Government; (iii) to evaluate actions which have been taken in the wake of the energy assessments and identify future work; and (iv) in light of the above, to prepare a detailed medium term work programme for the various components of the ESMP.

### C. Special Considerations

5. This project builds upon and is, in effect, defined by the results of the Energy Sector Assessment Programme which is being executed by the World Bank and financed jointly by the UNDP and the World Bank under the interregional project "Assessment of the Investment and Technical Assistance Needs in the Energy Sector." (Project INT/80/009).



D. Background and Justification

6. By the end of the 1970s most developing countries found that they had to deal with new and massive problems of adjustment in the energy sector. However, decisions on the substitution of imported oil by indigenous resources or other types of imported fuels were by no means easy to make. There were great uncertainties about domestic energy resource potential, about the types of technologies which could be adopted for the production, distribution and use of different fuels, about the availability and cost of finance for energy resource development and the time required to prepare and implement appropriate projects. Moreover, in most developing countries comprehensive energy sector management was in a rudimentary state. Basic information, for example, on demand patterns and growth, was poor, little of the preinvestment work necessary for effective decision making had been carried out and there was limited analysis of policy issues and of the mechanisms for coordinating the actions of the various users and producers of different types of energy. While many countries clearly needed to improve the efficiency of energy use there was little experience or technical capability in this area.

7. As a first step in response to this situation, the World Bank and the United Nations Development Programme in November 1980 jointly launched a 60-country Energy Sector Assessment Programme designed to provide a rapid diagnosis of the major energy problems faced by the developing countries and an evaluation of the options for solving these problems. Since the Programme began, 13 assessments have been completed, a further 12 are in various stages of preparation and 12 are planned to start in the next year.

8. The response to the Assessment Programme has been strong, with the number of requests to date from Government in excess of the 60 originally envisaged. Many Governments already have begun to use these reports to clarify their sector strategy and prepare solutions to major problems. The reports are also being used increasingly by many agencies to help them in developing their own assistance programmes for these countries.

9. The successful completion of a number of Energy Assessment Reports has highlighted the urgent need for follow up assistance to ensure that priority issues identified by these reports are in fact effectively addressed. This assistance falls into two broad categories. First, specific policy or investment options identified by the energy assessment reports frequently need to be analyzed in much greater detail before a final decision can be taken. Because of their essentially diagnostic nature, this detailed feasibility work cannot be incorporated into the assessment process itself but many countries nevertheless require assistance in carrying out these tasks. The second type of assistance that is being identified as having high priority relates to the strengthening of the institutional and management framework for the energy sector, particularly at the national level. In nearly all the countries where assessment missions have been fielded,



this assistance is likely to be a vital element in ensuring that complex, more diversified and much larger energy investment programs are successfully implemented. It will also be a necessary adjunct for developing effective energy demand management programs which span several fuels and user sectors.

10. Some of this assistance can be, and is being, provided by other donor agencies active in the field; indeed, one of the objectives of the assessment reports is to act as a catalyst in mobilizing such assistance. However, in a number of important areas additional effort is required because the existing mechanisms are either inadequate or not sufficiently flexible. A reflection of this is the increasing number of requests from countries where assessments have been carried out for the UNDP/Bank assessment team to continue to provide independent and objective policy and programme advice and support in helping to implement the recommendations of completed assessment reports. A few of these requests have been accommodated to date by reallocating resources from other UNDP/World Bank activities, but a growing file of requests from other countries cannot be financed from existing resources. The proposed ESMP, which is described more fully in a joint UNDP/World Bank brochure of November 1982, 1/ has been developed in response to this demonstrated need. The massive need for investment and the related planning and pre-investment work in the energy sector form the basic justification for the program and for the partnership of the UNDP and the World Bank in executing it.

#### E. Output

11. The output of the project, will essentially be the tangible impact in the countries involved in improved policies, investment plans and priorities, project preparation, energy efficiency, training programmes and institutional arrangements. In addition, the governments will receive two types of reports, as appropriate:

- (i) project descriptions and pre-feasibility studies, including justification and terms of reference for feasibility studies and recommendations for further project preparation, financing and other actions; and
- (ii) technical/management assistance studies including evaluation and recommendations on investment programmes, policy/institutional changes, further technical assistance programmes, and training programmes, with proposals for financing and other actions.

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1/ The Joint UNDP/World Bank Energy Sector Assessment Programme and Energy Sector Management Programme: A Progress Report. November 1982.



F. Activities

12. The full Energy Sector Management Programme comprises four major inter-related activities: (i) Energy Management Assistance Programme; (ii) Energy Efficiency Programme; (iii) Rural/Renewable Energy Programme; and (iv) Manpower and Institutional Development Programme:

(i) Energy Management Assistance Programme

13. This programme would enable the government to draw on Bank and/or UNDP staff resources, basically the same types of expertise as has been used in the assessment process, to help it strengthen the capability to effectively manage its energy sector and coordinate external assistance. If the government so requests, the process of helping the country could include:

- (a) assisting the government in improving its capacity for sector management through technical advice and support for the country's energy planning and management organization; technical assistance for establishing and maintaining an appropriate energy data base; and definition, preparation, supervision and evaluation of selected pre-feasibility studies and project proposals.
- (b) defining the specific requirements for technical assistance and pre-investment activities, including, e.g., the objectives, work plan and required inputs for both the government and external contributions in a format the government can use in discussion with official bilateral and multilateral financing agencies or with interested private investors;
- (c) assisting the government in developing a medium-term investment plan and an associated portfolio of project profiles for the major projects;
- (d) helping the government identify sources of finance, both public and private, for each of the follow-up activities identified during the assessment. This can include participating in meetings of aid consultative groups or UNDP Round Tables for the least developed countries, arranging special meetings or seeking financing through bilateral discussions with individual financing agencies;

(ii) Energy Efficiency Programme:

14. Improving the efficiency of energy use has substantial potential and high returns in almost all developing countries. An Energy Efficiency Programme has therefore been designed which would include:

- (a) assistance to governments in the establishment of a national energy efficiency capability, including manpower



development and institutional strengthening, the development of appropriate policies and programmes for managing energy demand and the implementation of energy audits in the industrial, transport and other sectors with the objective of identifying energy-saving opportunities and providing recommendations for achieving these.

- (b) assistance in preparing pre-feasibility studies of potential energy saving investments in economic subsectors where energy saving potential has already been identified. This includes a preliminary survey of the subsector to pinpoint the most promising energy conservation investment projects and the preparation of technical and economic pre-feasibility studies leading to the preparation of energy conservation investment projects for implementation by the appropriate financing sources.
- (c) Power System Loss Reduction. This would identify and quantify efficiency improvement requirements in electric power systems in countries which are willing to take steps to effectively reduce power system losses. Individual system improvement projects would be identified and subsequently prepared to the point where they would be suitable for financing by the World Bank, UNDP or other multilateral and/or bilateral institutions. Preparatory work for this component has already been financed from the UNDP Energy Account in 1982.

(iii) Rural/Renewable Energy Programme:

15. The energy assessment missions have emphasized the need for help in strengthening institutions, policies and practical programmes for new and renewable energy resources, particularly in the rural sector. In addition, a variety of pilot projects has been identified and these need to be evaluated and implemented before major investments can be made in renewable energy supply and conservation. These projects are relatively small-scale but heavy staff inputs are required for their preparation and supervision. While many donor agencies have expressed interest in providing funds for the projects themselves a mechanism is needed by which expert preparation and supervision resources can be provided to assess the performance of pilot projects and identify their investment potential, as well as to develop the necessary skills in the country to continue with this work. The proposed Rural/Renewable Energy Programme is designed to meet this need. It will cover activities flowing from the Assessment Programme and provide a focus for rural/renewable energy activities as well as a means of ensuring that experience gained in pilot projects is disseminated to all concerned countries. The criteria for involvement in specific pilot projects will be the Government's commitment to an appropriate institutional framework and to the potential follow-up investment as part of a national programme.



(iv) Manpower and Institutional Development Programme

16. The Assessment Programme and other work done by various UN agencies and the World Bank have identified a critical need for supporting manpower and institutional development in the energy sector. The other components of the Energy Sector Management Programme will address these problems in their relevant areas (sector management, energy efficiency, rural/renewable energy), and this integrated approach will be the most effective way to address certain specific training and institutional development needs. However, there are some types of needs that will not be fully covered in this way, and a supplemental manpower/institutional programme is therefore required.

17. This activity may include the following:

- diagnoses of organizational/managerial/manpower problems in key sector institutions with recommendations and preparation of terms of reference for further action;
- in-country training programmes to meet specific specialist needs (energy planning, energy economics, finance, technical specialities);
- workshops and seminars involving technical experts from various developing countries to exchange ideas and experience;
- short-term external training courses in various specialities (technical, economic, etc.);
- secondment of key individuals to foreign energy sector institutions and financing agencies;

18. As shown in the following table the full scale operation of the Energy Sector Management Programme would entail a total resource allocation of \$6 million in 1983 rising to \$11 million by 1986 (all in 1982\$).

ENERGY SECTOR MANAGEMENT PROGRAMME  
ESTIMATED FINANCIAL REQUIREMENTS  
1983-86  
(\$ million in 1982 prices)

	1983	1984	1985	1985	TOTAL
Energy Management Assistance Programme	1.50	1.50	2.00	2.00	7.0
Energy Efficiency Programme (industry, transport and major energy-using sectors)	3.00	5.00	5.50	5.50	19.00
(Power Loss-Reduction Project)	(2.00)	(3.50)	(3.50)	(3.50)	(12.50)
Rural/Renewable Energy Programme	(1.00)	(1.50)	(2.00)	(2.00)	(6.50)
Manpower and Institutional Development Programme	1.00	1.50	2.50	3.00	8.00
	<u>0.50</u>	<u>0.50</u>	<u>0.50</u>	<u>0.50</u>	<u>2.00</u>
<b>TOTAL</b>	<b>6.00</b>	<b>8.50</b>	<b>10.50</b>	<b>11.00</b>	<b>36.00</b>

18. As the full extent of these resources has yet to be mobilized, UNDP and the World Bank propose to adopt a phased approach in developing the programme. This project document which covers the initial phase of the Program, would enable the operation to begin on a limited scale. It would allow the executing agency to recruit a core team of energy planners, economists or technical specialists for a two-year period and to respond to priority requests for assistance in some of the countries where assessments have been carried out or are under preparation (see Annex 1 attached). Detailed work programmes in each of these countries are being worked out in consultation with the governments and the UNDP resident representatives. These programs will take into account the recommendations of the assessment reports, the requests from Governments and the availability of potential financing sources. This project would also enable the preparation of a detailed work programme for the full scale operation of the Energy Sector Management Programme which would be used as a basis for discussion with potential donors who could contribute additional resources for financing these operations.

19. Although there are four broad "components" to the programme, it is an integrated programme to be managed as such, in the same manner as the Energy Sector Assessment Programme. This is essential to ensure that the program responds to priority needs in a flexible way, that progress is effectively monitored and that the quality of output is maintained.

#### G. Inputs

20. (a) Government Inputs: Each participating Government would be expected to provide appropriate counterpart staff for the consultants funded under the project and to carry out the preparatory work required (such as data collection and analysis, surveys, institutional studies, etc.). The Government would normally also provide office space, supplies, secretarial services and local transport for the effective operation of the project.

(b) UNDP Inputs: These would include:

- Three full time energy experts for a period of 24 months each. These would comprise an energy economist/planner, a technical specialist and a program/management officer. This last position will be recruited by UNDP and will be based initially at UNDP Headquarters.
- Fifty months of short-term consultants.
- A budget to cover travel and per diem costs for both the full-time experts and short-term consultants
- A budget to cover secretarial, administration and other direct costs associated with setting up the program.
- Details of these inputs are set out in the attached budget.



- (c) Donor Agency Input: These will be incorporated in the total Energy Sector Management Program as they become available, and the budget document attached as Annex 2 will be revised accordingly.

Sections H through M

(Not Applicable.)

PART III

21. A. Schedule of Reviews

The project will be subject to periodic reviews by UNDP and the World Bank, in accordance with the UNDP's established policies and procedures.

B. Evaluation

The project will be subject to evaluation in accordance with UNDP's established policies and procedures.

C. Progress and Terminal Reports

The Bank will submit to UNDP semi-annual progress reports and a terminal report upon completion of the project, as well as reports of all country specific activities funded under the project as they become available.

ANNEX I

The Joint UNDP/World Bank Energy Assessment Programme

Assessments Completed Since Nov. 1980	Assessments in Progress
Bangladesh	Benin
Burundi	Bolivia
Haiti	Ethiopia
Indonesia	Fiji
Kenya	Morocco
Malawi	Nepal
Mauritius	Niger
Papua New Guinea	Nigeria
Rwanda	Peru
Sri Lanka	Senegal
Turkey	Solomons
Zambia	Sudan
Zimbabwe	Togo
	Uganda
	Yemen A.R.

4/1/83



PROJECT BUDGET COVERING THE UNDP CONTRIBUTION (IN U.S. DOLLARS)

Country : INTERREGIONAL  
 Number : INT/83/005  
 Title : Energy Sector Management Program

				CY83		CY84		CY85	
		SM	TOTAL	SM	TOTAL	SM	TOTAL	SM	TOTAL
10.0	Personnel								
11.1	Energy Expert	24	208,000	6	40,000	12	108,000	6	60,000
11.2	Energy Expert	24	208,000	6	40,000	12	108,000	6	60,000
11.3	Program Management <u>a/</u>	24	208,000	6	40,000	12	108,000	6	60,000
11.4	Consultants	50	526,000	15	157,800	20	210,400	15	157,800
11.99	Sub-total	122	1,150,000	33	277,800	56	534,400	33	337,800
13.0	Administration								
13.1	Adm. Officer <u>b/</u>		70,000		15,000		35,000		20,000
13.2	Researcher		60,000		15,000		30,000		15,000
13.3	Researcher		60,000		15,000		30,000		15,000
13.4	Secretary		39,000		9,000		20,000		10,000
13.5	Secretary		39,000		9,000		20,000		10,000
13.6	Secretary <u>a/</u>		39,000		9,000		20,000		10,000
15.0	Travel		160,000		65,000		80,000		15,000
15.99	Sub-total		467,000		137,000		235,000		95,000
16.0	Mission Costs		42,000		10,000		20,000		12,000
50.0	Miscellany								
52.0	Reports		21,000		8,000		10,000		3,000
53.0	Sundry		20,000		8,000		10,000		2,000
50.99	Sub-total		83,000		26,000		40,000		17,000
99	Project Total		1,700,000		440,800		809,400		449,800

a/ These posts will be recruited by UNDP and will be based initially at UNDP Headquarters in New York.

b/ 50% of estimated costs; remainder will be provided under the ongoing Energy Assessment Program.

## OFFICE MEMORANDUM

TO: Mr. O. Rahkonen, SEC

DATE: April 1, 1983

FROM: Masood Ahmed SUBJECT: Energy Policy Paper

1. As we agreed, I am attaching herewith the penultimate draft of the above paper on which the translation work can begin. This draft is missing the following:

- (i) an Executive Summary (10 single spaced pages)
- (ii) Chapter VI on the Role of the Bank (15 single spaced pages)
- (iii) the "boxes" for insertion at the end of each chapter (25 single spaced pages)
- (iv) three one-page annexes.

2. These items will be sent to you as part of the final draft of the paper by April 17. At that time I will also let you have a marked up copy showing any changes made to the text I am sending you today. If a covering President's memorandum is required for Board distribution of the paper, I will also let you have that by April 17.

3. Please call me if I can be of any further assistance.

Attachment

cc: Mr. Rao (EGY)  
Ms. Weaving (SVPOP)

MAhmed:cra



# OFFICE MEMORANDUM

TO: Distribution

DATE: April 1, 1983

FROM: Masood Ahmed, EGYEA



SUBJECT: EPP Boxes

Attached is the complete set of boxes for the EPP. While the boxes are editorially much improved over the preceding drafts, I believe they still need a careful final review on substance before we go to the Board. As this will have to be done by the end of next week (to allow for subsequent production, etc. by April 17), I would be grateful if you could take a hard look at them and identify possible improvements/modifications, etc. by Tuesday, April 5. I will arrange for a meeting on Tuesday morning at which we could go over and finalize each box.

Distribution:

Messrs. Rovani, Bourcier, Sheehan, Sadove, Rao, Fish, Dosik, Davis, Hughart, McCarthy (2), Bauer (2), Bharier (2), Fitzgerald, Taylor (EGY)

Mmes. Ribe (EGY), Weaving (OPSVP)

Attachments

MAhmed:cra

The World Bank's Energy Program

The World Bank's lending for energy projects has expanded rapidly in recent years, from US\$1.1 billion in FY77 to US\$3.4 billion in FY82. Of the total lending in FY82, US\$0.7 billion were highly concessional IDA credits to low income countries. As a proportion of the World Bank's total lending, energy's share was 14.8 percent in FY76-78, rising to 19.4 percent in FY79-81 and 25.8 percent in FY82.

A key feature of the larger energy lending by the World Bank has been diversification--adding, on an increasing scale, oil and gas exploration and development, other sources of energy and energy conservation to the previous lending for power, coal and pipelines. However, power still dominates the energy program in terms of dollars lent, because of the continued growth in demand for electric power and because conversion to electric power is often the most effective way of using a country's indigenous energy sources, such as hydro, low-grade coal, natural gas and geothermal.

The growth in lending for oil and gas has been most striking. Since the inception of this program in 1977, projects have been identified in over 50 countries and loans have been made for 44 projects in 36 countries, for a cumulative amount of about US\$1.8 billion. Among those, 26 loans for about US\$350 million dollars were for pre-development activities started since 1979, when lending for this purpose was approved. A program to accelerate exploration and development of coal was formulated in 1979. Five projects have been approved since then and a further twelve are under preparation.

Following a systematic review of renewable energy needs and potentials, the Bank has been building up a lending program that stresses fuelwood projects, selective support for alcohol programs and the incorporation of technologies for using renewable energy as components in Bank projects, sometimes on a demonstration or pilot basis.

Two new areas of industrial lending in the energy sector have been projects to upgrade the processing facilities in refineries to convert fuel oil into middle distillates and support for a wide range of activities to help increase the efficiency of energy use in developing countries.

The World Bank's energy program also supports the formulation and implementation of policies and strategies to foster the rational development of energy, and to encourage the mobilization of the required resources, both human and financial, from domestic and external sources, private and public. This was done in the past through loans for projects, structural adjustment and technical assistance, all of which are appraised in their sector and subsector context and help support rational selection of investment priorities, pricing and institutional reform, power development and transfer of technology. It is also done by way of the UNDP/World Bank Program of Energy Assessments.

The main features of the World Bank's energy program are described in greater detail in several boxes in this report.



## Box 1.2

### Determinants of Energy Consumption: Cross-Country Comparisons

Although it is obvious that energy is essential for economic development, it is less obvious why its use differs so much among economies at similar levels of development. For example, India's or China's per capita consumption of total commercial energy could be considered "abnormally" high in comparison to that of other low income developing countries, and per capita energy use in the US has exceeded that in Sweden by 50 percent or more in recent years.

To improve knowledge of the determinants of energy consumption, a recent Bank-sponsored study has analyzed cross-country variations in demand for four aggregated energy measures (total commercial energy, commercial energy-plus-fuelwood, petroleum and electricity) for two periods, 1969-71 and 1976-78.

The energy demand models used in the study relate intercountry differences in per capita use of energy not only to intercountry differences in per capita GDP and population (as was customary in early cross-section studies), but also to (a) differences in petroleum product prices, (b) energy-related structural differences not fully reflected in per capita income differences, and (c) winter temperature differences (to reflect requirements for space heating).

The study finds that:

- o For all four categories of energy, per capita GDP plays by far the most largest role in explaining intercountry differences in per capita use.
- o Petroleum product prices are significant for explaining intercountry differences in petroleum consumption.
- o The production of energy-intensive materials is an important determinant of energy use for each of the four energy categories considered in the study.
- o The winter temperature index provides an additional significant factor in explaining intercountry differences in consumption of commercial energy plus fuelwood. However, because of its correlation with other structural factors and with GDP, it has less influence on commercial energy consumption than might have been expected.

Once account is taken of the effect of not only per capita GDP but also of petroleum prices, energy-related structural factors, and temperature, then cross-country per capita income elasticities of energy use turn out to have been stable over the two time periods and range about  $(1.08 \pm 0.03)$  for commercial energy,  $(1.10 \pm 0.02)$  for petroleum

consumption,  $(0.90 \pm 0.04)$  for commercial energy-plus-fuelwood, and  $(1.17 \pm 0.04)$  for electricity. For petroleum consumption in non-OPEC countries, the cross-country price elasticity in period 1969-71 has been about  $(-0.55 \pm 0.08)$ .



Box 2.1

The World Bank's Role in Improving Energy Efficiency

During the last two to three years the Bank has addressed the task of improving energy efficiency in the developing countries on several fronts. The joint UNDP/World Bank Energy Sector Assessment Program (see Box 4.3) has increased awareness of the scope for energy savings, particularly in industry, power and transport. The assessments have identified not only substantial scope for reducing energy consumption per unit of output (Sri Lanka, Turkey) but also opportunities for substantial energy cost reductions through replacing petroleum with cheaper fuels, particularly in industry and power. In a number of cases, the Bank is following up through further technical assistance and projects (gas conversions for industrial consumers in Bangladesh; bagasse development for power in Mauritius).

Bank lending to improve energy efficiency and the preparation of energy conservation projects is increasing markedly: a number of structural adjustment loans have addressed energy conservation (Republic of Korea, Turkey, Guyana), with emphasis on improved pricing policies and energy audits. Industrial energy audits in the Republic of Korea, for example, have identified a number of large industrial plants where fuel savings of 20 percent and more are possible with relatively modest investments having payback periods of one year or less. A number of loans have been made and are in preparation for modifying existing processes and for converting to cheaper fuels in energy intensive plants, (refineries in Argentina and India; steel in Egypt; cement in Portugal; fertilizers in Turkey). Technical assistance for energy audits and institutional strengthening for energy conservation has been provided in various countries (Argentina, Barbados, Panama, Portugal, Turkey, Yugoslavia).

Many of the Bank's lending operations in energy and industry have addressed energy pricing policies, helping countries towards more rational and efficiency-oriented pricing for the various forms of energy (for example power tariffs in Tunisia; gas prices in Thailand, petroleum prices in Morocco and Pakistan, coal prices in Indonesia).

A number of operations will improve power distribution systems (e.g. in Burundi and Jamaica) and thereby reduce heavy distribution losses. Recently, the Bank has developed and begun to implement, with UNDP assistance, a pilot program for Power System Loss Reduction. (See Box 2.2) Work is underway (in Panama and Zimbabwe) under this program to develop a system for analyzing optimal system losses versus actual technical losses, and a program to reduce the gap between the two.

The Bank is supporting studies of how to improve transport energy efficiency, e.g. in Brazil, India, Republic of Korea, and a number of urban traffic management projects have been designed to alleviate

congestion and thereby reduce automotive fuel consumption. A recent railway modernization project in India includes a component to improve diesel locomotive fuel efficiency.

Efforts have been made to improve the efficiency of fuelwood and consumption of other biomass fuels through the promotion of better woodstoves in forestry/fuelwood/rural development projects, for example Burundi, India, Nepal, Philippines). The Bank is the executing agent for a bilateral/UNDP project to improve bagasse utilization in Mauritius and a number of energy assessments have identified scope for substantial savings of fuelwood in industry (for example in tobacco drying in Malawi).



Box 2.2

Loss Reduction in Power Systems

Investments in larger cables, better transformers, capacitors and other measures to improve efficiency are justified in most power systems in developing countries. Investments of this nature frequently are not made because they do not qualify as "projects" in the usual sense and therefore do not appear in the project portfolios of governments seeking financing. Improvements in the efficiency of power systems have been identified as necessary in most of the country energy assessments that have been completed under the joint UNDP-World Bank program. In response to these findings, the UNDP agreed to fund an initial program to identify power system efficiency projects in developing countries. This program uses a computer-based methodology, developed under a World Bank research project, to identify needed improvements and estimate the savings. The Bank agreed to be the executing agency for this program.

A pilot study of Zimbabwe's power system, which is relatively efficient, revealed significant and unexpected opportunities for efficiency improvements--for example, an expenditure of a million dollars on capacitors would have a payback period of less than two years. Similar findings are expected in the remaining three systems to be studied under the UNDP grant. The Bank and the UNDP are seeking funds to support a much larger program of this nature. These studies would help identify and initiate the preparation of training, rehabilitation and investment projects for which financing could be obtained from bilateral and multilateral sources including but not limited to the World Bank.

### Box 3.1

#### Exploration Promotion Projects in Oil and Gas

The main purpose of the Bank's projects to promote exploration for petroleum has been to accelerate the competitive offering of new acreage to the international petroleum industry on reasonable terms. To date, exploration promotion has focused largely on non-oil producing developing countries. Promotion projects contain one or more of the following elements:

- o Preparation of promotional data, relying heavily on the orderly compilation of existing data but also occasionally financing the limited acquisition of new data through aeromagnetic or gravity surveys, or reconnaissance seismic drilling.
- o Technical assistance and training for national entities in petroleum geology/geophysics and engineering, economics, accounting, and petroleum law.
- o Expert advice on petroleum laws, contracts and taxes.
- o Assistance to national entities during the promotion and subsequent negotiation of contracts with the international industry.
- o The reduction of political risks through a variety of arrangements ensuring Bank "presence" during the exploration and/or development phases of foreign contractor activity.

Exploration promotion features in close to half the Bank's oil and gas projects approved to date, though it amounts to only 5 percent of the cost of this program. The strong appeal of exploration promotion projects lies in their potentially large multiplier effect. In Madagascar -- the first country to go through the full cycle of project definition, promotion and negotiation of contracts -- two million dollars in Bank credits were disbursed within 18 months, while the total commitments made with four international companies for exploration amounted to more than US\$70 million. Other countries where promotion projects are well advanced and seem likely to result in new commitments, despite the unfavorable exploration climate, include Equatorial Guinea, Guinea-Bissau, Kenya, Liberia and Somalia.

The Bank's emphasis on exploration promotion will continue or grow over the next several years. Conventional promotion projects in smaller countries with little or no petroleum activity remain to be completed, and in many of the countries concerned, follow-up promotion may be justifiable. New possibilities for promotion projects lie in producing countries and in gas exploration. Significant exploration opportunities in larger petroleum producing countries are being set aside or postponed, to the host country's disadvantage, by national policies which unreasonably restrict international oil companies' access to acreage. Bank dialogue with these countries has increasingly stressed the benefits of a open door policy. The Bank has already identified opportunities for promoting gas exploration and development for internal markets and is working with host country governments to remove policy-related impediments, e.g., in the pricing area, to new foreign investment.



World Bank Lending for Electric Power

The Bank has been the largest international financing institution in the electric power sector of developing countries since the first power loan to Chile in 1948. It has been directly associated with about one-fifth of the total power investment in these countries in 1960-80, and with half of their investment in hydro development. Over the past 30 years, power projects accounted for \$16 billion--about 18% of the Bank's total lending--for some 400 projects in 85 countries. Increasingly, the Bank is being called upon to deal with the new and unique problems posed by the low income countries (Burma, Burundi, Upper Volta, the Yemens) while it continues to help finance a much reduced proportion of investments in the more mature systems of middle income countries.

In FY76-82, 138 electric power projects totalling US\$10.2 billion were approved. The table below gives a breakdown of this lending (in millions of US dollars) by function. (These totals exclude lending for electric power components of projects in other sectors. For example, in 1978-80, 24 other projects contained US\$72 million in lending for such components in multi-purpose irrigation, rural development, and tourism projects).

FY	No. Projects	Generation				Geo-thermal	Trans. & Dist.	Rural Elect.	Total
		Hydro	Oil/Gas	Coal					
76	20	208	71	-	19	592	59	949	
77	17	186	127	145	-	470	24	952	
78	19	348	97	305	-	256	140	1,146	
79	19	183	243	495	9	191	234	1,355	
80	25	783	52	840	40	589	88	2,392	
81	17	864	5	65	0	258	131	1,323	
82	21	122	200	700	-	713	396	2,131	
<u>Total</u>	<u>138</u>	<u>2,694</u>	<u>795</u>	<u>2,550</u>	<u>68</u>	<u>3,069</u>	<u>1,072</u>	<u>10,248</u>	
Percent		26	8	25	1	30	10		

Although the reference period is short, the table illustrates the longer-term trend of Bank lending for electric power with continued emphasis on hydro, a movement away from oil- and gas-fired thermal generation towards coal, some involvement in new sources (geothermal), significant activities in transmission and distribution, including rural electrification. There is no deliberate plan to lend for specific types of projects but the above distribution of lending roughly parallels the distribution of investments of the developing countries in electric power.

The Bank's loans now typically amount to less than 5% of the investment programs they support compared with about 30% in the '60's. An important contribution of the Bank in the power sector is, thus, its assistance in strengthening the power companies and other institutions in the power sector, by advising on selection of priorities for system development, management structure, electricity rates, financial and technical operating practices, and by enhancing their ability to raise funds for expansion from sources other than the Bank.

### Box 3.3

#### Co-Generation Using Bagasse

Bagasse, the fibrous cane residue remaining from the process of sugar juice extraction, has been a traditional energy source for the world's sugar mills, which burn it in boilers to generate process steam and power for internal needs. Current annual sugar production worldwide is estimated to generate about 124 million tons of bagasse in excess of normal in-plant fuel requirements; converted to "export" power in the mills, this amount of renewable fuel could substantially increase available public electricity. However, cane processing efficiency varies widely from mill to mill, largely depending on the type and age of equipment used, with the result that some mills today have substantial amounts of excess bagasse while others require supplementary fuel for their operation.

A recent Bank study identified several ways, all using presently available technology, to greatly increase the overall energy efficiency of existing mills, produce surplus bagasse and generate electricity for sale to the grid. These include installing pre-evaporators to conserve steam, drying of wet bagasse with flue gases to improve combustion efficiency, installing high pressure boilers to increase steam generation efficiency and compressing bagasse to enable it to be stored and used beyond the harvest season. The study identifies the conditions under which production of electricity by mills for the public is especially worth pursuing. In most of the scenarios studied, the economic returns were well over 10 percent at an electricity selling price of US\$.06/kWh.

The two key technologies involved--bagasse drying with flue gases and pelletizing--are relatively new and need to be demonstrated more extensively. The former is practiced in some plants today while the latter has so far been used only in Hawaii, where the sugar mill presently sells "firm" power from bagasse to the utility company for 11 months a year. Bagasse power co-generation projects are presently being considered in Guyana, Mauritius, and other sugar producing developing countries.



Box 3.4

World Bank Financing of Refinery Investments

1. During the last three years, the Bank has undertaken refinery sector reviews in 32 developing countries <sup>1/</sup>. As a result of this work, eight loans/credits were made: four (Argentina, Bangladesh, India and Portugal) for the installation of secondary conversion (cracking) and energy efficiency facilities and four (Pakistan, Peru, Zambia and Zimbabwe) for the execution of engineering and technical assistance studies to determine the most economic source of fuel supply to the country and to help evaluate the economic and technical viability of proposed investments. The Bank has not participated in the financing of grass-root refineries.

2. As discussed in the text, the mix of petroleum products demanded in developing countries cannot be produced by the simple refineries typical of those countries, so that additional investments need to be made in facilities to convert surplus fuel oil into middle distillates. Such secondary conversion investments normally do not add to the overall refinery distillation capacity, but remove a major structural problem faced by the industry worldwide. In fact, the three secondary conversion projects supported by the World Bank will help reduce the projected 1985 worldwide surplus of fuel oil by about 18%, and the projected deficit of middle distillates by 10%. These projects are expected to earn high economic rates of return, ranging from 30-100%. For example, the refinery rationalization project in India, which involves installation of conversion capacity in five existing refineries at a total cost of \$938 million, will lead to net foreign exchange savings of about 10 billion dollars (1981 prices) during its 12 years of operating life.

3. In connection with its financing of refinery projects, the Bank has assisted developing countries in formulating appropriate sectoral supply and demand strategies on the basis of rational investment planning, and supported by appropriate sectoral institutional and policy reforms, and in assessing the technical and economic merits of alternative conversion schemes.

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<sup>1/</sup> Argentina, Peru, Columbia, Ecuador, Brazil, Paraguay, Uruguay, Costa Rica, Portugal, Hungary, Turkey, Egypt, PDRY, Jordan, Togo, Sierra Leone, Ghana, Nigeria, Mauritania, Zaire, Zambia, Zimbabwe, Kenya, Ethiopia, Sudan, India, Bangladesh, Pakistan, Thailand, Indonesia, Philippines.

## Box 3.5

### Unusual Projects

While the bulk of its lending program has been used to finance electric power, petroleum, and forestry projects, the World Bank also finances less conventional projects when their technical, economic and other characteristics make them priorities for borrowing countries. In Morocco, a US\$20 million loan is being used to study and test alternative means of exploiting enormous oil shale resources. The project includes construction of a test station using a locally developed retorting process, a comparative technical evaluation of available retorting processes using results from the test station and other data gathered worldwide, a feasibility study of commercial oil-from-shale operations based on several alternative processes, and a comparison of these results with those of a parallel study on direct combustion of the shale in a proposed thermal power plant.

In Brazil, a US\$250 million loan is contributing to the national fuel alcohol program. While most of the funds will support investments in sugarcane-based production capacity, part will be used to build cassava-based plants, to demonstrate the feasibility of wood-based plants and other "new" technologies, to support basic and applied agricultural and industrial research related to biomass energy, and a system to monitor and evaluate the agricultural, transport, industrial, employment and environmental effects of the fuel alcohol program.

Peat resources are the subject of a series of studies and tests supported by an IDA credit to Burundi. After a survey of the principal deposits and alternative extraction and processing techniques, large-scale on-site tests will be made and cost estimates prepared for a commercial operation.

Several countries (Kenya, Philippines, Yugoslavia) have obtained assistance in various phases of geothermal exploration and development. In Kenya, a 30 MW power plant was financed with the help of a US\$40 million loan and an additional 15 MW may be added under a second project now under preparation. In the Philippines, US\$32 million is being lent for the drilling of 32 exploration and development wells, associated technical assistance, and technical and policy studies. Part of the geotheram heat will be used for purposes other than electric power production.

The use of low temperature geotheram heat for such purposes as greenhouse and residential heating is being studied with the help of a US\$0.7 million loan component in Yugoslavia. Another component of the latter project provides US\$0.6 million for the pilot installation of a biogas plant on a large pig farm. The renewable energy component of a project in Portugal provides a comprehensive package of assistance for resource and market studies, demonstraton/pilot projects and research and development activities in the areas of solar, wind and biomass energy.



The World Bank's Fuelwood Lending Program

Since 1978, the Bank has assisted in financing 31 free standing forestry projects, of which 16 are rural reforestation projects with major emphasis on fuelwood production. Nine are multipurpose reforestation projects producing both industrial as well as fuelwood; three are directed towards improvement of infrastructure and natural forest management, and are producing significant volumes of fuelwood as a by product of their logging operations; and further three involve construction of sawmills in which fuelwood generated as sawmilling waste is being used either for power generation or sold as fuelwood to local populations. During the same period the Bank also financed forestry components in 27 agricultural and rural development projects with emphasis on the provision of fuelwood and poles for local use.

While the Bank's fuelwood projects have varied widely in scope and content, they typically include the following principal elements:

- o Village level studies identified people's perceived needs and determine ways of reinforcing village support for fuelwood programs.
- o Surveys to estimate local needs for wood, assessing the volume of resources already available and quantifying the additional planting needs.
- o Surveys to delineate marginal lands more suitable for forestry than to agricultural production.
- o Demarcation and protection from fire and grazing of village woodlots.
- o Construction of a network of forest access tracks and forest nurseries at the village level and production of an assured supply of seeds or seedlings for planting either in village woodlots, along embankments or roadsides, in hedgerows, or around homesteads by private farmers.
- o Strengthening of government forestry services.
- o Research into fast growing tree species, into the technical problems and potential economic benefits of agro-forestry crop combinations and allied forestry research problems.
- o Introduction of innovative technology such as more efficient woodburing stoves and charcoal kilns.

The West Bengal Social Forestry Project in India is a good example of the genre, in which alternative approaches to rural forestry are being pursued with built-in flexibility to switch from one type of activity to another according to people's response and project progress. Under the farm forestry component of this project, free seedlings plus a cash incentive will be provided to encourage landless farmers to take up tree planting. A thousand "motivators" at the village level will promote the project and will advise professional staff from the newly created Social Forestry Wing of the State Government Forest Department about people's

perceptions over such issues as choice of species and number of seedlings to be planted each year. The project also includes a significant research component which will address alternative planting methods for farm forestry and, in particular, collection and storage methods for seeds of indigenous tree and fodder species.

A group of projects in the Sahel countries is designed to develop suitable technical packages for improving the critical fuelwood situation in those countries. Niger Forestry II is experimenting to see whether highly productive irrigated plantations could be established close to Niamey, thereby eliminating continued dependence on savannah woodland, most of which is within a 50 kilometer radius of the capital has been cut down.



The World Bank's Coal Program

To help accelerate coal output in developing countries, the Bank has adopted a threefold approach to the coal sector in parallel to that initiated for other fuels. This approach involves (i) attracting increased external and local capital flows for coal exploration, preinvestment work and development; (ii) directly financing coal exploration, preinvestment and development projects wherever appropriate; and (iii) reviewing and drawing up coal development strategies for individual countries.

During the FY78-83 period coal/lignite subsector studies were undertaken in 27 countries, including some as part of Energy Assessment Missions (See Box 4.3). Based on the findings of the surveys, which will continue during FY84-85, the Bank is working with individual countries to establish the strategies and projects to accelerate coal production and use whenever appropriate.

During FY78-82, six loans were made totaling US\$309 million; two for coal development projects and four for coal engineering/exploration projects. Two typical projects approved are:

- o A US\$185 million loan for the Bukit Asam coal mining and transport project in Indonesia, estimated to cost US\$1.2 billion. The project involved the development of a 3 mtpy coal mine, upgrading of 405 km of railway, and port and shipping facilities. The project is to be implemented by state owned mining, shipping and railway companies with specialized outside assistance. The major focus of Bank involvement has been efficient implementation and coordination of the mining, transport and power components and the introduction of coal pricing based on border prices to encourage more efficient resource allocation.
- o A US\$17 million loan to the coal division of the Philippines National Oil Company, to explore three promising coal bearing regions and prepare prefeasibility and feasibility studies. The project provides for training in the design and implementation of coal exploration/preinvestment programs, introduction of sound exploration and investment selection criteria in the coal sector, and compilation of sufficient geological preinvestment data to promote both local and foreign investment in the Philippine coal sector.

For the period FY83-87, a lending program of 3-5 projects totalling US\$300-500 million a year is being prepared. These will include (i) development projects in the large and medium-sized coal

producing countries (China, India, Republic of Korea, Hungary, Yugoslavia and Turkey), which will account for about 70 percent of developing countries' coal output growth during the coming decade; (ii) continuous support for coal exploration and development in smaller coal producing countries; and (iii) support for coal imports where appropriate as a major short-, medium- or and long-term alternative to oil.



Energy Assessments Program

The World Bank and the United Nations Development Programme in November 1980 jointly launched a 60-country Energy Sector Assessment Program designed to provide a rapid diagnosis of the major energy problems faced by the developing countries and an evaluation of the options for solving these problems. These assessments analyze the policies that would encourage greater production from indigenous energy sources and greater efficiency in the use of energy; they judge the investment priorities in the energy sector; and they provide a framework for multilateral and bilateral technical assistance in the sector.

<u>Assessments Completed since November 1980</u>	<u>Assessments in Progress</u>
Bangladesh	Benin      Peru
Burundi	Bolivia    Portugal
Haiti	Colombia   Senegal
Indonesia	Costa Rica   Solomons
Kenya	Ethiopia    Sudan
Malawi	Fiji        Togo
Mauritius	Morocco    Uganda
Papua New Guinea	Nepal       Yemen A.R.
Rwanda	Niger
Sri Lanka	Nigeria
Turkey	
Zambia	
Zimbabwe	

The costs of these assessments have ranged from US\$50,000 to US\$250,000 per country and the reports are being submitted to governments about eight months after the field missions. Each mission, which normally includes four to eight participants and stays in the country for up to one month, responds to a specific request from the government for advice on the energy sector and follows agreement with the government on the priority issues to be tackled. The Bank and UNDP have staff for this purpose, and also call on a number of consultant technical specialists.

The response to the Assessment Program has been strong and the number of requests to date from governments is currently more than the 60 originally envisaged. Governments are making extensive use of the advice provided by the assessments. Many governments are requesting further assistance, such as more detailed definition of energy technical assistance packages and specific assistance in energy efficiency programs, support for energy planning and management, rural and renewable energy programs. For this reason the UNDP and the Bank have recently launched an Energy Sector Management Program encompassing these activities. See Box 4.4.

Box 4.4

Energy Sector Management Program

The UNDP and the Bank have recently launched an Energy Sector Management Program designed to provide a rapid and flexible response to governments who request assistance in implementing the policy, planning and institutional recommendations of the Energy Assessment Reports (see Box 4.3) or in carrying out prefeasibility studies for energy investments identified in these reports.

The Energy Sector Management Program, which is designed to provide follow-up technical assistance of not more than US\$1 million for countries which have had assessments, provides assistance to:

- o improve a government's ability to manage its energy sector, for example defining work programs, evaluating management information needs, identifying sources of public and private finance, arranging aid coordination meetings, developing a medium-term investment plan;
- o improve the efficiency of energy use; e.g., by developing energy audit institutions and programs, studying potential energy-saving investments in all sectors, and identifying measures to tackle losses in electric power systems;
- o developing an appropriate institutional framework for rural and renewable energy activities, including facilities for disseminating the findings of research, pilot projects; and
- o meet specific short-term needs for training and manpower development.

The program aims to supplement, advance and strengthen the impact of bilateral or multilateral resources already available for technical assistance in the energy sector. While the program is already underway, further resources are required before its full potential to respond to the urgent requests of the developing countries can be achieved.



Efficiency in Power System Operation

In most electric power systems, the cheapest way of increasing the electricity supply is to improve the efficiency of existing facilities. This can be done by making more generation units available, improving the efficiency of thermal plants, and by reducing losses incurred in distribution and transmission. The World Bank routinely investigates these options as part of its appraisal of power projects.

- o The introduction of computer-designed turbine runners can increase both the capacity of hydroelectric plants and their generating efficiency. The Bank is preparing a project in Uganda where a change in runners will give a 40 percent increase in output (at higher efficiency).
- o If thermal plants are not operated at optimum conditions of temperature and pressure, significant amounts of fuel are wasted. A one percent reduction in the operating efficiency of a 300 MW coal-fired unit, for example, could cost US\$1 million annually. The ongoing UNDP/World Bank analyses of energy efficiency include audits of efficiency in thermal plants.
- o The Bank urges its borrowers to carry out preventive maintenance. Reductions in the availability of existing units need to be offset by additions to capacity if a utility is to maintain the same level of reliability. For a large utility that is adding one 300 MW thermal unit every year, a one percent reduction in the availability of units would cost US\$6 million a year.
- o Plant betterment studies promoted by the Bank have shown that simple corrective measures such as cleaning blocked condensers or repairing leaking valves can have payback periods as short as a few days.
- o The Bank recognizes the need for effective training of utility staff. A recent Bank project in Bangladesh included a simulator for use in training thermal plant operators.
- o It is important that appropriate spare parts be on hand. As a part of project appraisal, the Bank reviews the utility stores position and sometimes finances spare parts as a project component (Tanzania Fourth Power, Zaire First Power).
- o Financial losses from electricity that is stolen or improperly metered, so that consumers are not charged enough for it, seriously affect the profitability of many power utilities and should be minimized. On one Bank

project (Afghanistan) unpaid consumption was virtually eliminated over a 5-year period and reduced overall transmission and distribution losses by one-half.

- o As part of a Bank technical assistance program, a consultant conducted brief audits of thermal power stations in Guatemala, Nicaragua, and Uruguay, and identified operating improvements which typically would reduce annual cost by US\$4 million per station. The findings are now being incorporated in Bank projects.
  
- o A gas turbine operation and maintenance training program was included at the Bank's suggestion in a UNDP-funded technical assistance project executed by the Bank in Egypt; it has resulted in an estimated 20 percent increase in availability.



Box 6.1

Official Lending For Energy Investment

The World Bank has been the largest and most diverse multilateral lender for energy; its commitments nearly quadrupled during 1975-81, and totaled US\$10 billion in that period. Commitments from the other main multilateral institutions more than doubled, totalling US\$6 billion in the same period. OPEC multilateral agencies also increased their energy project lending, with total commitments of US\$1 billion over the period. <sup>1/</sup> The share of energy in the total operations of the multilateral agencies in 1975-81 ranged from 46 percent for the OPEC Fund, 27 percent for the IDB and 25 percent for the World Bank, to 9 percent for the African Development Bank.

Multilateral Commitments For Energy, 1975-81  
(million US dollars)

	1975	1976	1977	1978	1979	1980	1981	TOTAL
Asian Development Bank	153	147	217	249	325	385	480	1950
African Development Bank	19	13	27	28	64	52	32	235
Inter American Development Bank (IDB)	270	288	407	923	397	416	935	3636
European Investment Bank	26	90	41	48	188	348	140	881
Subtotal	468	538	692	1248	974	1201	1687	6702
World Bank	584	1009	1102	1156	1467	2849	2233	10400
TOTAL	1052	1547	1749	2404	2441	4048	3820	17102

Source: Annual Reports, (EGY data 12/82).

Commitments of Official Development Assistance for energy rose from US\$ 0.5 billion in 1976 to some US\$ 2 billion in 1980. Though bilateral assistance for energy has risen more slowly than other public external capital flows to the sector, energy has been the fastest growing area in many bilateral aid programs. For DAC members (including the EEC), the share of energy in total aid programs increased from 3.5 percent in 1976 to 8.5 percent in 1980 (see Table below). Over the 1975-80 period, Germany, Japan, OPEC, and the US accounted jointly for over 75 percent of total concessional bilateral financing for energy investment in developing countries.

<sup>1/</sup> Based on aggregate OPEC profile figures as published by the OPEC Fund. The World Bank's Debt Reporting System only reports US\$632 million.

Commitments Of Bilateral Concessional Assistance For Energy 1/  
(million US dollars)

Donor	1975-1980		Energy as % of Donor's Total Bilateral Concessional Aid, 1975-80
	\$	%	
Canada	366	5	38
France	249	3	
Germany	879	12	11
Japan	2125	28	
United Kingdom	41	1	21
United States	1057	14	3
OPEC Bilateral	1622	22	20
Other	1162	15	
TOTAL	7501	100	8.5

1/ Source: World Bank Debt Reporting System. OECD figures are substantially different for the two years for which data are available (1979-80), due probably to differences in project classification as well as the inclusion of nonconcessional flows in bilateral totals. For example, the 1980 OECD estimate is US\$ 2.1 billion compared to US\$ 1.5 billion in the DRS. DRS figures are used for consistency as well as to establish time series of data.

Official export finance for energy investments by the 12 main national programs surveyed for this report totaled approximately US\$ 30 billion in 1975-80. While reducing its share in developing countries' energy financing from a high 43 percent in 1975 to 33 percent in 1980, export credit financing for energy nonetheless doubled in volume.



Transfer of Technology in World Bank Petroleum Lending

1. An important element of the transfer of technology in the petroleum industry is the strengthening of managerial and engineering capacity for formulating and implementing projects, and for negotiating with potential suppliers of capital, technology and managerial resources for those projects. In its petroleum operations the World Bank attempts to ensure that the technologies used are the most appropriate to the circumstances, both technically and economically. Borrowers are urged to accept external assistance if this is needed to avert costly problems in project design and implementation. Technology is transferred through contacts between nationals and Bank staff and consultants, training, introduction of technologies and associated equipment, and the establishment, with foreign help, of research and development centers.
2. A certain amount of useful knowledge is transferred through the work of Bank staff and consultants in borrowing countries. For example, project identification and appraisal teams combine experts in different fields working together -- an approach that is novel in many developing countries.
3. Training is one of the most frequent means of transferring technology. The China Daqing petroleum project is establishing two training centers, one to train 2,000 skilled workers annually, and the other to train 500 professionals annually. Instructors, visual aids, electronic simulators, and technical materials are being drawn from industrial countries.
4. The Bank reviews the equipment specifications that are prepared by consultants in collaboration with the staff of the borrowers, and normally insists that the import of equipment be coupled with maintenance and service contracts. Many of the techniques being used in the petroleum sector in developing countries are extremely new, and some are used only by the individual international companies who developed and patented them. The Bank seeks to develop borrowers' abilities to select technologies most suitable to the circumstances, being aware of their scope and limitations, and to monitor their use, being aware of the results that should be expected. Technologies introduced through Bank-assisted projects include those for three dimensional seismic surveys, drilling through high temperature and high pressure reservoirs, secondary and tertiary oil recovery, petroleum reservoir modeling, and the introduction of petroleum data banks and information management.

Box 6.3

World Bank Assistance for Gas Development in Egypt

In 1971, the Government of Egypt requested the Bank to participate in financing a project to recover associated gas which was flared in the Gulf of Suez. The project was relatively straightforward and its economics were attractive. However, in the course of evaluating the project, the Bank identified:

- o a much larger potential for utilization of associated and nonassociated gas than had been evaluated by the Government;
- o areas which were gas prone and whose exploration had been neglected by private oil companies partly because the latter gave higher priority to finding exportable oil, and partly because of several limitations on the domestic utilization of gas such as the limited local gas market, the large infrastructure investment and long lead-time required to develop such a market, and inadequate gas pricing provisions;
- o the need to step up oil exploration as well as substitution of gas for oil consumed domestically to slow down the decline in oil exports; and
- o the need to rationalize pricing policies.

As a result of this analysis studies were commissioned to define what further action the Government should take in the sector. The lending program has encouraged a serious dialogue on policy issues which promises some improvements in gas pricing. As the result of the Bank's involvement, the Government now has at its disposal all the elements needed to define and implement a long-term gas development strategy. With such a strategy, natural gas could become a major source of domestic energy for Egypt in the 1980s.

*Will be replaced by new version on  
Monday April 4<sup>th</sup>.  
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World Bank Assistance for Gas Development in Thailand

1. The World Bank has a long association with energy planning in Thailand. It worked with the Thai government in the 1960s and 1970s to establish and develop EGAT, the national power utility in power generation and lignite development. Its review of energy sector issues and priorities in 1979 set the scene for a national energy master plan and another review of energy issues including energy pricing, is now in progress.

2. The discovery of gas in 1974 offered Thailand the opportunity to reduce radically its dependence on imported energy. But, to bring these resources into production required larger investments than Union Oil, which had discovered the gas, wished to finance, and hence the Thai government and the company jointly approached the World Bank. With its history of lending for energy in Thailand, the Bank was able to respond quickly. It became clear that these resources could become extremely important for the country. Since Thailand had no previous experience in gas, the Bank gave comprehensive and detailed assistance, including arranging for prefeasibility studies, a study of potential markets, obtaining an advisor on negotiations with Union Oil, and assistance in creating the Natural Gas Organization of Thailand and its successor, the Petroleum Authority of Thailand, PTT. Advice was given on gas pricing based on economic costs, and on the roles to be played by public and private bodies in developing the resource. In establishing NGOT and PTT, particular attention was given to identifying staffing requirements, training, and developing the capabilities for planning and programming, appraising investments and monitoring projects. Needs for data and for research were identified, and arrangements were made to secure them. Assistance on financial matters was given to ensure that the organization was financially sound, and efforts were made to ensure that plans for gas development and use were compatible with those for other energy sources. The study of gas utilization examined the impact that Thailand's gas supplies will have on Thai industry and identified a number of gas-based industries such as plastics and fertilizers for optimum use of the gas.

3. The Bank has helped to finance three Thai gas projects. The first, for engineering technical assistance, was followed by a second project to create one of the longest submarine pipelines in the world. This pipeline (425 kilometers 34 inches in diameter offshore, and 170 kilometers 28 inches in diameter on land, for a cost of US\$450 million) delivers gas from the Gulf to South Bangkok, where gas is now replacing fuel oil in two power stations and will shortly supply a cement factory. The submarine part of it was routed through areas where additional gas discoveries seemed likely, and was built with a capacity large enough to handle gas from such discoveries. Other oil companies

were attracted to Thailand; a field newly discovered by Shell is now operational and a discovery by Esso is being appraised. The pipeline project was planned and implemented rapidly while the first discovery was being developed, so that gas came onstream only three years after negotiations. The third project assisted by the Bank is for a gas treatment and separation plant. This will produce enough liquified petroleum gas to make imports unnecessary and to meet demand up to 1986. (Additional plans are in hand to meet demand up to 1992).

4. The institutional dimension of the Bank's lending for gas is an extremely important one. PTT is now capable of policy analysis and of implementing investments. The coordination between the diverse public institutions responsible for supplying energy has improved; its further improvement is the subject of continuing collaboration between the Bank and the Thai Government.



Improving Efficiency in Oil & Gas Production

1. The efficiency of oil and gas production can be raised in two main ways: inducing the more rapid development of reserves, and increasing the rate of recovery from reserves. Both of these efforts may be sought through three types of actions: improving the environment for petroleum operations so that they become more profitable; improving the management of these operations; and introducing technologies that increases the proportion of reserves that can be recovered.

2. All three types of action generally require greater access to international expertise, finance, and technology, and all three feature prominently in the World Bank's support for petroleum development. In its sector work and policy discussions with governments, the Bank discusses and advises on national systems of petroleum product pricing, taxation of petroleum operations, government procurement systems, and salary structures that affect the efficiency of publicly-owned oil companies. In Ecuador, for example, an independent audit of petroleum reserves, carried out at the Bank's urging, has strengthened the government's resolve to offer better legal and contractual arrangements to private oil companies. The preliminary results of the study also motivated the government to agree with Texaco on the rapid implementation of a water injection scheme which will allow the country to continue as a net exporter of oil in the medium term. New companies are now beginning to explore and produce in the country.

3. The Bank also advises national oil companies on managerial structure and practices, assists with planning and with oil companies' pricing policies, and help to select expert consultants where needed. In Peru, for example, Petroperu, the national oil company, is being reorganized on the basis of recommendations by consultants and the Bank. To streamline production operations, improvements are being made in its accounting, financial administration and management information practices and procedures, while studies are in progress on pricing of petroleum products and investment priorities. The Bank also recommended that the company install a corrosion control and monitoring system (for wells, pipelines, storage tanks), including the establishment of, and training of staff for, a special unit within the company. By attacking corrosion problems early on, Petroperu will be able to avoid costly shutdowns like that which occurred in 1981 on the Trans-Andean pipeline.

4. Introduction of new but proven technologies in exploration drilling and oil field development is common in Bank petroleum projects (see Box 6.2 on Technology Transfer in Bank Petroleum Lending). One loan is financing enhanced oil recovery through selective injection of carbon dioxide in Turkey's largest known oil field, Bati Raman. This new technology, used previously only in Romania, the US, USSR and Venezuela has permitted oil production in this field to increase three-fold. A similar approach may be used in Bank projects in China and India. In a


gas field in Turkey, production has been increased almost ten-fold by the use of well simulation techniques, particularly hydraulic fracturing. Further development of this field has now become highly economic, and such techniques have been accepted by Turkish authorities as the standard way to increase the production potential of gas discoveries in the Thrace basin. In Ivory Coast, Petroci and its foreign partners followed the Bank's recommendation to carry out a three dimensional seismic survey. This will save the drilling of dry holes in a field with very complex geology, but it will also allow the definition of new reserves and, possibly, a subsequent increase in production.



## OFFICE MEMORANDUM

TO: Mr. Michel Devaux, EA2

DATE: April 1, 1983

FROM: Masood Ahmed, EGYEA SUBJECT: Mauritius - SAL II

As I mentioned to you yesterday, I was quite surprised when I read the yellow cover draft of the SAL II President's Report to find that the energy sector was no longer going to be covered by the proposed SAL. As you know, we have strongly supported an energy focus for this operation and have contributed to its preparation work.

I understand that this change in focus has been brought about by a desire to simplify the coverage of SAL II. I also realize that, partly as a result of the energy focus of SAL I, we now have a good dialogue with the Government of Mauritius on both policy and investment issues in the energy sector. As you know, we also have a UNDP technical assistance project under implementation which provides us with a vehicle for this dialogue. Nevertheless, as with SAL I, I think it would be extremely useful to reinforce the priority that the Bank attaches to the energy sector in Mauritius by including some coverage of this in the proposed SAL. There is also a danger of sending inappropriate signals to the Government by dropping this component in midstream; the Government's statement of development policy, which is attached to the President's Report, has a well focussed statement on energy. Finally, the fact that we now have a new Minister for Energy is an additional reason for continuing to have an energy component in the forthcoming SAL.

I would be grateful for your reactions.

cc: Messrs. Schott (EA2); Bharier, Hughart (EGY)

MAhmed:jl

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TO:

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(1) MR. BERNARD RUSSELL

MANILA HOTEL

MANILA, PHILIPPINES TELEX NO. 63496

(2) MR. SAKDIYIAM KUPASRIMONKOL

CHIEF, REGIONAL MISSION

CENTRAL BANK OF THE PHILIPPINES

MANILA, PHILIPPINES TELEX NO. 742-40541

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FOR WORLD BANK GUEST, <sup>TO:</sup> BERNARD RUSSELL. FOLLOWING OUR DISCUSSIONS  
 IN WASHINGTON, THIS IS TO CONFIRM THAT WE WOULD LIKE YOU TO  
 PARTICIPATE IN THE FOLLOW UP MISSION TO DISCUSS THE DRAFT ENERGY  
 ASSESSMENT REPORT WITH THE GOVERNMENT OF SENEGAL. THE MISSION IS  
 SCHEDULED TO BEGIN WORK IN DAKAR ON APRIL 20 AND THE DISCUSSIONS  
 SHOULD BE COMPLETED BY APRIL 23. YOU SHOULD ARRANGE TO ARRIVE  
 IN DAKAR ON APRIL 19. WE WILL MAKE RESERVATIONS FOR YOU AT THE  
 TERANGA HOTEL BEGINNING APRIL 19. PLEASE LET MS. OWEN KNOW BY  
 TELEX WHETHER YOU WOULD PREFER YOUR TICKET AND TRAVEL ADVANCE TO  
 BE SENT TO MANILA OR TO LONDON AND YOUR PROPOSED ARRIVAL FLIGHT  
 NO. IN DAKAR AS SOON AS CONVENIENT. THE TICKET WILL BE FOR  
 LONDON/DAKAR/LONDON TRIP AS WE AGREED. THIS ASSIGNMENT UNDER  
 LETTER OF APPOINTMENT DATED FEBRUARY 7, 1983. REGARDS, ~~AMMED~~  
 ENERGY DEPARTMENT, WORLDBANK

END  
OF  
TEXT

NOT TO BE TRANSMITTED

CLASS OF SERVICE: **TELEX** TELEX NO.: DATE: **March 30, 1983**

SUBJECT: **SENEGAL: Energy Assessment Mission**

DRAFTED BY: **MAHmed:jrs**

CLEARANCES AND COPY DISTRIBUTION:

AUTHORIZED BY (Name and Signature):  
**Julian Bharier, Div. Chief, EGYEA**

DEPARTMENT:

**Energy**

SECTION BELOW FOR USE OF CABLE SECTION  
CHECKED FOR DISPATCH

shem

## OFFICE MEMORANDUM

TO: Mr. Y. Rovani, Director, Energy Department

DATE: March 28, 1983

FROM: Masood Ahmed



SUBJECT: Title of Energy Policy Paper

On March 21 Mr. Rao circulated a note to EGY Senior Staff and Policy Paper Core Group asking them to rank the following five titles for the EPP:

- Energy Issues in the Developing Countries
- Energy Strategies in Developing Countries 1980-95
- Energy Issues and Options in Developing Countries
- Managing the Energy Transition in Developing Countries
- Meeting the Energy Needs of Developing Countries

Nine of the questionnaires are now back and have been tabulated by Mathew. "Energy Issues and Options in Developing Countries" is the preferred title both in terms of the number of people assigning it their first preference and in terms of getting the highest number of points on a weighted scale for all titles. (see attachment)

My own vote was also for this title which I think best describes the scope and focus of the paper as it has emerged. However, some of the other titles are also quite interesting and we are holding off on a final decision pending your review.

Two additional titles suggested by Dick Dosik are particularly catchy.

"Son of EDC" (to preserve continuity with the past)

or

"Energy Unaffiliated" (to emphasize break from the past).

cc: D.C. Rao



### Ranking of EPP Titles

<u>Title</u>	<u>No. of 1st Positions</u>	<u>Points on Weighted Average</u> <sup>1/</sup>
Energy Issues in the Developing Countries	1	40
Energy Strategies in Developing Countries 1980-95	2	34
Energy Issues and Options in Developing Countries	3	52
Managing the Energy Transition in Developing Countries	4	40
Meeting the Energy Needs of Developing Countries	5	38

N.B. Total questionnaires = 9

1/ Points based on following scale

<u>Ranking Order</u>	<u>Points</u>
1	10*
2	8
3	6
4	4
5	2

\* Also assigned if only one choice was indicated.

DRAFT  
MAhmed:cra  
3/24/83

TO: Managing Committee Members

DATE:

FROM: Ernest Stern

SUBJECT: Energy Policy Paper

1. You will have already received a copy of the above paper which is to be reviewed by the Managing Committee on March 28th. The paper has now been discussed by the OPSC which has endorsed the paper's Main Findings and Recommendations (see attached Minutes). However, in the light of the comments made at the OPSC meeting, the analysis in the paper is being strengthened in three areas prior to Board distribution. These are:

- (i) The discussion of energy pricing issues in Chapter II will include a more extensive review of the current state of energy pricing in the developing countries. It will also emphasize the need to ensure that short-term fluctuations in international energy prices do not translate into domestic energy pricing signals which can slow down the pace of energy conservation or indigenous resource development.
- (ii) The analysis of investment requirements for energy sector development will include an explanation of the methodology used to derive these estimates. The investment requirements discussion will also deal more explicitly with the impact of lower international oil prices on the volume and composition of these



investments. This will show that the bulk of these investments would continue to be economically viable even if long-term international oil prices fell to say \$25/bb (in 1983\$).

- (iii) The discussion of external financing issues in Chapter V will include more detailed data on historical financing trends both by source of funds and type of projects. This will better identify those areas where the external financing problem is likely to be more severe in the coming decade.

2. The paper is to be distributed to the Board on April 17 for discussion on May 17. This schedule should easily allow for the incorporation of any comments made at the Managing Committee meeting next Monday.

## OFFICE MEMORANDUM

DATE: March 23, 1983

TO: Files

FROM: Norman Hicks, CPD *NH*

EXTENSION: 60132

SUBJECT: Minutes of the Operations Policy Sub-Committee Meeting of March 17, 1983

Present:

Members: Messrs.: Stern (Chairman), Chaufournier, El-Darwish, Goldberg, Husain, Karaosmanoglu, Lerdau, Michalopoulos, Vergin, Wapenhans, Wiehen

Others: Messrs.: Baum, Rovani, Waide, Bourcier, Hicks, Ms. Pratt, Messrs. Ahmed, Rao, Ms. Ribe, Weaving

Energy Policy Paper

1. Mr. Rovani introduced this draft Board paper which analyzes the main issues and options facing developing countries in adjusting to higher energy costs, and the role of the Bank in providing financial support, and technical assistance and policy advice for improved energy sector management. The paper recognizes that despite the vastly expanded investment requirements for energy development in the developing countries, the Bank's own financial contribution is constrained by the availability of resources. The paper proposes that the Bank continue to limit energy lending to a maximum 25% share of total lending.
2. In the subsequent discussion, the speakers generally commended the analysis of the paper and its main conclusions. However, they noted that the paper could be improved in a few areas. First, some members expressed concern over whether the projected investment requirements in the sector were reasonable considering the recent decline in oil prices. It was explained by the staff, however, that despite recent developments, most analysts forecast a rising real price of oil in the long run, based on the rising marginal costs of oil production in non-OPEC countries. The estimates of investment by sector contained in the paper were built up from a country-by-country examination of production potentials and demand. For the most part, these projects have average production costs sufficiently low that they would remain viable even if long-term oil prices were to drop to the level of \$25 per barrel (in 1983 \$). Only some hydro and secondary or tertiary oil recovery projects have costs in excess of an equivalent oil price of \$25 per barrel. Another speaker added that volatility in oil prices can have an effect on the willingness of countries to undertake an investment



program, and distortions in relative prices can affect investments, particularly in such areas as refining. Present price declines in developing countries, for instance, are undercutting effort to bring domestic energy prices in line with world prices. Members suggested that more discussion of energy pricing issues could be usefully added to the paper, as well as a better discussion of the methodology used to derive the energy investment program.

3. Some members noted that the discussion of the oil and gas sector did not give enough attention to developing domestic private companies within developing countries. Also the treatment of the international oil companies (IOCs) was somewhat uncritical. Many countries, including Canada, are wary of having their energy sectors dominated by the IOCs. An alternative to direct investment by the IOCs was the possible purchase of technology not tied to a capital transfer. The Chairman noted that while the subject of the possible displacement of oil company investments by Bank lending was not treated in the report directly, this topic was covered in the paper on "Alternative Sources of Project Finance".

4. In the paper's analysis of external financing issues, some members felt there needed to be more details on the historical evolution of financial flows from commercial banks, IOCs, and other sources for the various energy sub-sectors, since there were major differences between these sub-sectors in terms of foreign exchange requirements and suitability of various forms of finance.

5. Some members felt that the treatment of the fuelwood problem was inadequate. While the problems were adequately described, the solutions were uncertain or vague. It was noted that the Bank should have a more active program in this area, although it was suggested that finance was not the constraint; rather, it was the problem of preparing projects suitable for Bank finance and of overcoming the institutional and other problems associated with effective project implementation. Another member noted the inadequate or partial treatment of environmental issues. This sector had an important impact on the environment and the issue needed to be addressed more directly.


6. The Chairman noted that the paper was generally a good one, but could be improved by taking note of the comments made. Since the paper has already been distributed to the Managing Committee for discussion on March 28, a short note summarizing the discussion of the OPSC would be forwarded shortly. The paper would be revised after the Managing Committee discussion and distributed for a Board discussion on May 17.

Chron

## OFFICE MEMORANDUM

TO: Mr. D. C. Rao, Assistant Director, EGY

DATE: March 22, 1983

FROM: Masood Ahmed SUBJECT: Energy Policy Paper - Arrangements for Board Distribution

I have agreed on the following arrangements with Mr. Rahkonen of the Secretary's Department regarding the Board distribution of the Policy Paper:

- (i) We will deliver to Mr. Rahkonen the original copy of the final version for grey cover printing on or before Friday, April 15.
- (ii) We will deliver the color graphics for the paper to the Print Shop by Friday, April 1.
- (iii) As the text of the paper has to be translated into French for the Board, we will give Mr. Rahkonen a draft of the paper by Friday, April 1 to enable the translation to begin. Any subsequent changes made to this draft will be marked up in red on another copy which we will deliver with the final original on April 15.
- (iv) Printing, distribution and translation will be handled by Mr. Rahkonen's office.

cc: Mr. Rahkonen (SEC)  
Mmes. Ribe (EGY); Weaving (OPSVP)



Chon

DRAFT  
MAhmed:cra  
3/22/83

TO: Managing Committee Members

DATE:

FROM: Ernest Stern

SUBJECT: Energy Policy Paper

1. You will have already received a copy of the above paper which is to be reviewed by the Managing Committee on March 28th. The paper has now been discussed by the OPSC which has endorsed the paper's Main Findings and Recommendations (see attached Minutes). However, in the light of the comments made at the OPSC meeting, the analysis in the paper is being strengthened in three areas prior to Board distribution. These are:

- (i) The discussion of energy pricing issues in Chapter II will include a more extensive review of the current state of energy pricing in the developing countries and will emphasize the need to ensure that short-term fluctuations in international energy prices do not translate into domestic energy pricing signals which can slow down the pace of energy conservation or indigenous resource development.
- (ii) The analysis of investment requirements for energy sector development will include an explanation of the methodology used to derive these estimates. The investment requirements discussion will also deal in more detail with the impact of lower international oil prices on the volume and composition of these

investments. This will show that the bulk of these investments would continue to be economically viable even if long-term international oil prices fell to say \$25/bb (in 1983\$).

- (iii) The discussion of external financing issues in Chapter V will include more detailed data on historical financing trends both by source of funds and type of projects. This will better identify those areas where the external financing problem is likely to be more severe in the coming decade.

2. The paper is to be distributed to the Board on April 17 for discussion on May 17. This schedule should easily allow for the incorporation of any comments made at the Managing Committee meeting next Monday.



INSERT A

Mr. Rovani introduced this draft Board paper which analyzes the main issues and options facing developing countries in the successful completion of the adjustment to higher energy costs. The paper also examines the role of the Bank in the energy sector, both in terms of the financial assistance it provides for energy development projects but also increasingly in the form of technical assistance and policy advice for improved energy sector management. The paper recognizes that despite the vastly expanded investment requirements for energy development in the developing countries, the Bank's own financial contribution is constrained by the availability of overall resources for lending and the 25% ceiling on energy lending as a proportion of this total.

In the subsequent discussion, the speakers generally commended the analysis of the paper and its main conclusions. However, they noted that the presentation of the paper could be improved in a few areas. First, some [continue with old text]

Draft  
NHicks:pp  
March 21, 1983

Files

Norman Hicks, CPD

Minutes of the Operations Policy Sub-Committee Meeting of March 17, 1983

Present:

Members: Messrs.: Stern (Chairman), Chauffournier, El-Darwish, Husain,  
Karaosmanoglu, Lerdau, Michalopoulos, Vergin, Wapenhans, Wiehen

Others: Messrs.: Baum, Bourcier, Hicks, Ms. Pratt, Messrs. Rao, Rovani, Ahmed,  
Waide, Ms. Weaving  
Ms. Ribe

Energy Policy Paper

*Repl. by A*  
This draft Board paper emphasis the Bank's role both in assisting the finance of needed investments in energy, and in helping countries improve their management and development of the energy sector. As an overall guideline, the paper proposes that the Bank continue to devote about 25% of its lending to the energy sector, although the paper notes that the qualitative impact of the Bank on policies and investment choices is probably more important than its financial contribution.

*MS*  
Members expressed concern over whether the projected investment requirements in the sector were reasonable considering the ~~current softness in the petroleum market~~, and the recent decline in oil prices. It was explained by the staff, however, that *notwithstanding recent developments, most analysts forecast* a rising real price of oil ~~is seen by most~~.



analysts in the long run, based on the rising marginal costs of oil production in non-OPEC countries. The estimates of investment by sector contained in the paper were built up from a country-by-country examination of production potentials and demand. For the most part, these projects have average production costs sufficiently low that they would remain viable even if oil prices were to drop to the level of \$25 per barrel. Only some small hydro and secondary or tertiary oil recovery projects have costs in excess of an equivalent oil price of \$25 per barrel. The members noted, however, that volatility in oil prices can have an effect on the willingness of countries to undertake an investment program, and distortions in relative prices can affect investments, particularly in such areas as refining. Present price declines in developing countries, for instance, are undercutting effort to bring domestic energy prices in line with world prices. Members suggested that more discussion of energy pricing issues could be usefully added to the paper, as well as a better discussion of the methodology used to derive the energy investment program.

Some members noted that the treatment of the international oil companies (IOCs) was ~~one-sided and~~ <sup>somewhat</sup> uncritical. Many countries, including Canada, are wary of having their energy sectors dominated by the IOCs. As an

Alternative, more attention can be given to developing domestic private companies within developing countries. Another alternative to direct

investment by the IOCs was the possible purchase of technology not tied to a capital transfer. The Chairman noted that while the subject of the possible displacement of oil company investments by Bank lending was not treated in the report directly, this topic was covered in the paper on "Alternative Sources of Project Finance".

long term

(in 1980's)

Another speaker said

discussion of oil and gas sector did not give enough

not give enough

Also the

In the paper's analysis of external financing flows, some members felt there needed to be more details on the composition of the Bank's lending program in energy, and changes over time. Likewise, it was important to identify the financial flows from commercial banks, IOCs, and others by sub-sector, since there were major differences between these sub-sectors in terms of foreign exchange requirements and suitability of various forms of finance.

Some members felt that the treatment of the fuelwood problem was inadequate. While the problems was adequately described, the solutions were uncertain or vague. It was noted that the Bank should have a more active program in this area, although it was suggested that finance was not the constraint; rather, it was the problem of identifying projects suitable for Bank finance. Another member noted the inadequate or partial treatment of environmental issues. This sector had an important impact on the environment and the issue needed to be addressed more directly.

The Chairman noted that the paper was generally a good one, but could be improved by taking note of the comments made. Since the paper has already been distributed to the Managing Committee for discussion on March 28, a short note summarizing the discussion of the OPSC would be forwarded shortly. The paper would be revised after the Managing Committee discussion and distributed for a Board discussion on ~~April 19~~ <sup>May 17</sup>.



**The World Bank**

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT  
INTERNATIONAL DEVELOPMENT ASSOCIATION

1818 H Street, N.W.  
Washington, D.C. 20433  
U.S.A.

(202) 477-1234  
Cable Address: INTBAFRAD  
Cable Address: INDEVAS

Chron

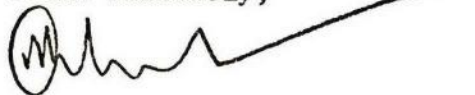
March 18, 1983

Mr. R. E. Coleberd  
Manager, Government Reports and Market Analysis  
Tosco Corporation  
10100 Santa Monica Blvd.  
Los Angeles, CA 90067

Dear Mr. Coleberd:

As per your letter dated March 7, 1983, I am enclosing data on India as requested by you. Recent information on Singapore and Indonesia is not available here in the Bank and may be obtained from other sources.

Yours sincerely,



Masood Ahmed  
Economist  
Energy Assessment Division  
Energy Department

Enclosure

India

	<u>FY1980</u>	<u>FY1981</u>	<u>FY1982 (Estimate)</u>
(in million m-tons)			
Domestic crude production	11.77	10.51	16.19
Net crude imports	16.12	16.25	15.36
Net product imports	<u>3.90</u>	<u>6.90</u>	<u>5.23</u>
Supply	31.79	33.66	36.78
% Self-sufficient	37	31	44

Fiscal Year: April 1 - March 31



## INDIA

Production and Consumption of Petroleum Products  
(Million Tons)

	Actual						Forecast			
	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85
<b>Production</b>										
Light Distillates	3.63	3.82	4.05	4.30	4.46	4.10	5.14	5.77	5.90	7.13
LPG	0.33	0.36	0.38	0.40	0.41	0.37	0.41	0.59	0.62	0.78
Petrol	1.28	1.34	1.42	1.52	1.51	1.52	1.61	2.12	2.16	2.59
Naphtha	1.91	1.99	2.12	2.26	2.42	2.12	3.00	2.95	3.01	3.62
Others	0.11	0.13	0.13	0.12	0.12	0.09	0.12	0.12	0.12	0.14
Middle Distillates	10.77	11.23	12.08	12.48	13.08	12.12	14.14	16.67	16.87	20.15
Kerosene	2.44	2.58	2.45	2.51	2.54	2.40	2.91	3.51	3.66	4.50
Jet Fuel/Aft	0.93	0.98	1.08	1.18	1.10	1.00	1.01	1.34	1.34	1.58
High Speed Diesel	6.29	6.40	7.13	7.35	7.98	7.37	9.05	10.10	10.21	12.18
Light Diesel Oil	0.95	1.09	1.22	1.23	1.23	1.11	0.95	1.39	1.33	1.51
Others	0.16	0.18	0.20	0.21	0.23	0.24	0.22	0.32	0.32	0.38
Heavy Ends	6.43	6.38	7.09	7.42	8.26	7.91	8.92	9.93	9.59	10.93
Fuel Oil	5.08	4.73	5.33	5.65	6.35	6.12	6.95	7.55	7.21	8.12
Lube Oil	0.34	0.37	0.41	0.49	0.43	0.43	0.55	0.54	0.54	0.62
Bitumen	0.70	0.95	0.99	1.10	1.10	1.08	1.29	1.48	1.50	1.79
Others	0.31	0.33	0.36	0.32	0.32	0.28	0.27	0.35	0.33	0.39
<b>Total</b>	<b>20.83</b>	<b>21.43</b>	<b>23.22</b>	<b>24.20</b>	<b>25.79</b>	<b>24.12</b>	<b>28.20</b>	<b>32.36</b>	<b>32.36</b>	<b>38.21</b>
<b>Consumption</b>										
Light Distillates	3.60	4.04	4.23	4.57	4.46	4.38	5.14	5.20	5.68	5.93
LPG	0.34	0.37	0.39	0.41	0.41	0.40	0.49	0.65	0.46	0.85
Petrol	1.28	1.32	1.39	1.50	1.49	1.52	1.60	1.53	1.58	1.64
Naphtha	1.84	2.20	2.29	2.51	2.41	2.32	2.93	2.86	3.17	3.26
Others	0.14	0.15	0.16	0.15	0.15	0.14	0.12	0.16	0.17	0.18
Middle Distillates	11.65	12.65	13.77	15.19	16.32	17.01	17.79	19.54	21.13	23.09
Kerosene	3.10	3.32	3.63	3.96	3.87	4.21	4.70	4.52	4.82	5.22
Jet Fuel/Aft	0.90	0.96	1.04	1.15	1.14	1.13	1.12	1.33	1.46	1.62
High Speed Diesel	6.60	7.11	7.74	8.65	9.80	10.33	10.73	12.18	13.27	14.59
Light Diesel Oil	0.88	1.08	1.16	1.22	1.27	1.13	1.03	1.29	1.35	1.44
Others	0.17	0.18	0.20	0.21	0.24	0.21	0.21	0.22	0.22	0.22
Heavy Ends	7.20	7.40	7.54	8.50	9.10	9.40	9.39	10.84	11.44	12.10
Fuel Oil	5.78	5.73	5.84	6.67	7.08	7.42	7.20	8.17	8.54	8.95
Lube Oil	0.44	0.45	0.48	0.54	0.57	0.59	0.60	0.60	0.63	0.67
Bitumen	0.69	0.88	0.91	0.94	1.07	1.08	1.30	1.50	1.65	1.83
Others	0.29	0.34	0.31	0.34	0.38	0.31	0.29	0.57	0.62	0.65
<b>Total</b>	<b>22.45</b>	<b>24.10</b>	<b>25.54</b>	<b>28.24</b>	<b>29.88</b>	<b>30.79</b>	<b>32.32</b>	<b>35.58</b>	<b>38.25</b>	<b>41.12</b>

Source: Ministry of Petroleum, Chemicals and Fertilizers, and Bank staff estimates.

Energy Department  
January 1983

TOSCO CORPORATION  
10100 SANTA MONICA BOULEVARD  
LOS ANGELES, CALIFORNIA 90067  
213/552-7000

March 7, 1983

Mr. M. Ahmed  
Room D449  
The World Bank  
1818 H Street NW  
Washington, D. C. 20431

Dear Mr. Ahmed:

It was surely good to talk with you this morning. How grateful I am for your suggestion that I send to you a list of the specific type of information update I am seeking on energy and countries in the Indian Ocean and Southeast Asia.

1. India: 1982, ~~1983~~ Petroleum consumption by product for energy and non-energy use, production and imports of crude oil and petroleum products.
2. Singapore: 1981, 1982 Crude oil imports by source, oil exports by destination.
3. Indonesia: 1981, 1982 Domestic consumption of petroleum products, crude oil production and exports, destination of crude oil exports.

I shall be most grateful for your consideration of this request and any information your department can provide. I look forward to hearing from you.

Cordially,



R.E. Coleberd  
Manager, Government Reports and  
Market Analysis

REC:dp



MA's Chron  
(att to Project Doc.)

March 17, 1983

Yves:

The attached project document for the Energy Sector Management Program incorporates the comments made by UNDP at our meeting with them last week. We agreed to leave the output section fairly vague in the project document (in terms of numbers of countries to be covered during the initial phase) so that we can apply the initial \$1.25 million flexibly and incorporate additional funds into the project without having to revise the project document each time.

Could we meet to review this document early next week (say Tuesday) when Julian will be back (hopefully with the first of the additional contributions!).



Hal

cc: D.C., Masood, Julian o/r

(M. AHMED: CRA)

DRAFT

UNITED NATIONS DEVELOPMENT PROGRAMME

Interregional Project Agreement

Project Document

Title: Energy Sector Management Programme -  
a Technical Assistance Programme  
linked to the Energy Sector  
Assessment Program

Duration: 2 years

Starting Date: April 1983

Number:

Sector: Energy

Government Cooperating Agencies:

To be identified in each  
of the participating  
countries.

Date of Submission: March 1983

Executing Agency: The World Bank

Government Contribution: (In kind--See Section IIG)

UNDP Contribution: \$1,250,000

Approved: \_\_\_\_\_  
On behalf of Executing Agency

Date: \_\_\_\_\_

Approved: \_\_\_\_\_  
On behalf of the UNDP, Division for  
Global and Interregional Projects

Date: \_\_\_\_\_

Approved: \_\_\_\_\_  
On behalf of UNDP, Energy Account

Date: \_\_\_\_\_



PART I

Legal Context

1. This agreement will become effective when signed on behalf of the United Nations Development Programme and the World Bank. Cooperating arrangements with participating countries will be undertaken through exchange of letters at which time the respective Basic Agreement between Governments and the United Nations Development Programme shall take effect.

PART II

A. Development Objectives

2. The long term objective of the Energy Sector Management Programme, of which this project constitutes the initial phase, is to enable developing countries to successfully complete the transition to an era of high cost energy by strengthening their capability to plan and manage all types of energy projects within the framework of an integrated sector development strategy.

B. Immediate Objectives

3. The immediate objective of the Energy Sector Management Programme (ESMP) is to provide timely and well focussed technical assistance to participating developing countries to help them implement a broad range of recommendations made by the Energy Sector Assessment Reports in four major areas: sector management, policy formulation and institutional strengthening; energy efficiency improvements; rural and renewable energy development; and training and manpower development.

4. The immediate objectives of this project are: (i) to review the technical assistance requirements in countries for which assessment

reports have been completed or are under preparation and to identify how these requirements could be met from the various bilateral, multilateral and other agencies; (ii) to initiate ESMP operations in priority countries where such assistance is urgently required and has been requested by the Government; (iii) to evaluate actions which have been taken in the wake of the energy assessments and identify future work; and (iv) in light of the above, to prepare a detailed medium term work programme for the various components of the ESMP.

C. Special Considerations

5. This project builds upon and is, in effect, defined by the results of the Energy Sector Assessments Programme which is being executed by the World Bank and financed jointly by the UNDP and the World Bank under the interregional project "Assessment of the Investment and Technical Assistance Needs in the Energy Sector." (Project INT/80/009).

D. Background and Justification

6. By the end of the 1970s most developing countries found that they had to deal with new and massive problems of adjustment in the energy sector. However, decisions on the substitution of imported oil by cheaper indigenous resources or other types of imported fuels were by no means easy to make. There were great uncertainties about domestic energy resource potential, about the types of technologies which could be adopted for the production, distribution and use of different fuels, about the availability and cost of finance for energy resource development and the time required to prepare and implement appropriate projects. Moreover, in most developing countries comprehensive energy sector management was in a rudimentary state. Basic information, for



example, on demand patterns and growth, was poor, little of the preinvestment work necessary for effective decision making had been carried out and there was limited analysis of policy issues and of the mechanisms for coordinating the actions of the various users and producers of different types of energy. While many countries clearly needed to improve the efficiency of energy use there was little experience or technical capability in this area.

7. As a first step in response to this situation, the World Bank and the United Nations Development Programme in November 1980 jointly launched a 60-country Energy Sector Assessment Programme designed to provide a rapid diagnosis of the major energy problems faced by the developing countries and an evaluation of the options for solving these problems. Since the Programme began, 13 assessments have been completed, a further 12 are in various stages of preparation and 12 are planned to start in the next year.

8. The response to the Assessment Programme has been strong, with the number of requests to date from Government in excess of the 60 originally envisaged. Many Governments already have begun to use these reports to clarify their sector strategy and prepare solutions to major problems. The reports are also being used increasingly by many agencies to help them in developing their own assistance programmes for these countries.

9. The successful completion of a number of Energy Assessment Reports has highlighted the urgent need for follow up assistance to ensure that priority issues identified by these reports are in fact effectively addressed. Because of their essentially diagnostic nature,

these reports often identify various follow up activities requiring further assistance. This assistance could either be for detailed analysis of particular policy or investment options leading up to prefeasibility studies for potential projects; or it could be aimed towards rectifying weaknesses in the institutional and management framework for the sector. Some of this assistance can and is being provided by other donor agencies active in the field; indeed, one of the objectives of the assessment reports is to act as a catalyst in mobilizing such assistance. However, in a number of important areas additional effort is required because the existing mechanisms are either inadequate or not sufficiently flexible. A reflection of this is the increasing number of requests from countries where assessments have been carried out that the UNDP/Bank assessment team continue to provide independent and objective policy and programme advice and support in helping to implement the recommendations of completed assessment reports. A few of these requests have been accommodated to date by reallocating resources from other UNDP/World Bank activities, but a growing file of requests from other countries cannot be financed from existing resources. The proposed ESMP, which is described more fully in a joint UNDP/World Bank brochure of November 1982 1/ has been developed in response to this demonstrated need. The massive need for investment and the related planning pre-investment work in the energy sector form the basic justification for the program and for the partnership of the UNDP and the World Bank in executing it.

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1/ The Joint UNDP/World Bank Energy Sector Assessment Programme and Energy Sector Management Programme: A Progress Report. November 1982.



E. Output

10. The output of the project, will essentially be the tangible impact in the countries involved in improved policies, investment plans and priorities, project preparation, energy efficiency, training programmes and institutional arrangements. In addition, the governments will receive two types of reports, as appropriate:

- (i) project descriptions and pre-feasibility studies, including justification and terms of reference for feasibility studies and recommendations for further project preparation, financing and other actions; and
- (ii) technical/management assistance studies including evaluation and recommendations on investment programmes, policy/institutional changes, further technical assistance programmes, and training programmes, with proposals for financing and other actions.

F. Activities

11. The full Energy Sector Management Programme comprises four major inter-related activities: (i) Energy Management Assistance Programme; (ii) Energy Efficiency Programme; (iii) Rural/Renewable Energy Programme; and (iv) Manpower and Institutional Development Programme:

(i) Energy Management Assistance Programme

12. This programme would enable the government to draw on Bank and/or UNDP staff resources, basically the same types of expertise as has been used in the assessment process, to help it strengthen the capability

to effectively manage its energy sector and coordinate external assistance. If the government so requests, the process of helping the country could include:

- (a) assisting the government in improving its capacity for sector management through technical advice and support for the country's energy planning and management organization; technical assistance for establishing and maintaining an appropriate energy data base; and definition, preparation, supervision and evaluation of selected pre-feasibility studies and project proposals.
- (b) defining the specific requirements for technical assistance and pre-investment activities, including, e.g., the objectives, work plan and required inputs for both the government and external contributions in a format the government can use in discussion with official bilateral and multilateral financing agencies or with interested private investors;
- (c) assisting the government in developing a medium-term investment plan and an associated portfolio of project profiles for the major projects;
- (d) helping the government identify sources of finance, both public and private, for each of the follow-up activities identified during the assessment. This can include participating in meetings of aid consultative groups or UNDP Round Tables for the least developed countries, arranging special meetings or seeking financing through bilateral discussions with individual financing agencies;



(ii) Energy Efficiency Programme:

13. Improving the efficiency of energy use has substantial potential and high returns in almost all developing countries. An Energy Efficiency Programme has therefore been designed which would include:

- (a) assistance to governments in the establishment of a national energy efficiency capability, including manpower development and institutional strengthening, the development of appropriate policies and programmes for managing energy demand and the implementation of energy audits in the industrial, transport and other sectors with the objective of identifying energy savings opportunities and providing recommendations for achieving these.
- (b) assistance in preparing pre-feasibility studies of potential energy saving investments in economic subsectors where energy saving potential has already been identified. This includes a preliminary survey of the subsector to pinpoint the most promising energy conservation investment projects and the preparation of technical and economic pre-feasibility studies leading to the preparation of energy conservation investment projects for implementation by the appropriate financing sources.
- (c) Power System Loss Reduction. This would identify and quantify efficiency improvement requirements in electric power systems in countries which are willing to take steps to effectively reduce power system losses. Individual system improvement projects would be identified and

subsequently prepared to the point where they would be suitable for financing by the World Bank, UNDP or other multilateral and/or bilateral institutions. Preparatory work for this component has already been financed from the UNDP Energy Account in 1982.

(iii) Rural/Renewable Energy Programme:

14. The energy assessment missions have emphasized the need for help in strengthening institutions, policies and practical programmes for new and renewable energy resources, particularly in the rural sector. In addition, a variety of pilot projects has been identified and these need to be evaluated and implemented before major investments can be made in renewable energy supply and conservation. These projects are relatively small-scale but heavy staff inputs are required for their preparation and supervision. While many donor agencies have expressed interest in providing funds for the projects themselves a mechanism is needed by which expert preparation and supervision resources can be provided to assess the performance of pilot projects and identify their investment potential, as well as to develop the necessary skills in the country to continue with this work. The proposed Rural/Renewable Energy Programme is designed to meet this need. It will cover activities flowing from the Assessment Programme and provide a focus for rural/renewable energy activities as well as a means of ensuring that experience gained in pilot projects is disseminated to all concerned countries. The criteria for involvement in specific pilot projects will be the Government's commitment to an appropriate institutional framework and to the potential follow-up investment as part of a national programme.



(iv) Manpower and Institutional Development Programme

15. The Assessment Programme and other work done by various UN agencies and the World Bank have identified a critical need for supporting manpower and institutional development in the energy sector. The other components of the Energy Sector Management Programme will address these problems in their relevant areas (sector management, energy efficiency, rural/renewable energy), and this integrated approach will be the most effective way to address certain specific training and institutional development needs. However, there are some types of needs that will not be fully covered in this way, and a supplemental manpower/institutional programme is therefore required.

16 This activity may include the following:

- diagnoses of organizational/managerial/manpower problems in key sector institutions with recommendations and preparation of terms of reference for further action;
- in-country training programmes to meet specific specialist needs (energy planning, energy economics, finance, technical specialities);
- workshops and seminars involving technical experts from various developing countries to exchange ideas and experience;
- short-term external training courses in various specialities (technical, economic, etc.);
- secondment of key individuals to foreign energy sector institutions and financing agencies;

17. As shown in the following table the full scale operation of the Energy Sector Management Programme would entail a total resource allocation of \$6 million in 1983 rising to \$11 million by 1986 (all in 1982\$).

ENERGY SECTOR MANAGEMENT PROGRAMME  
ESTIMATED FINANCIAL REQUIREMENTS  
1983-86  
(\$ million in 1982 prices)

	1983	1984	1985	1985	TOTAL
Energy Management Assistance Programme	1.50	1.50	2.00	2.00	7.0
Energy Efficiency Programme (industry, transport and major energy-using sectors)	3.00	5.00	5.50	5.50	19.00
(Power Loss-Reduction Project)	(2.00)	(3.50)	(3.50)	(3.50)	(12.50)
Rural/Renewable Energy Programme	(1.00)	(1.50)	(2.00)	(2.00)	(6.50)
Manpower and Institutional Development Programme	1.00	1.50	2.50	3.00	8.00
	<u>0.50</u>	<u>0.50</u>	<u>0.50</u>	<u>0.50</u>	<u>2.00</u>
TOTAL	6.00	8.50	10.50	11.00	36.00

18. As the full extent of these resources has yet to be mobilized, UNDP and the World Bank propose to adopt a phased approach in developing the programme. This project document which covers the initial phase of the Program, would enable the operation to begin on a limited scale. It would allow the executing agency to recruit a core team of energy planners, economists or technical specialists for a two-year period and to respond to priority requests for assistance in some of the countries where assessments have been carried out or are under preparation (see Anne 1 attached). Detailed work programmes in each of these countries are being worked out in line with the recommendations of the assessment reports, the requests from Governments and the availability of potential



financing sources. This project would also enable the preparation of a detailed work programme for the full scale operation of the Energy Sector Management Programme which would be used as a basis for discussion with potential donors who could contribute additional resources for financing these operations.

19. Although there are four broad "components" to the programme, it is an integrated programme to be managed as such, in the same manner as the Energy Sector Assessment Programme. This is essential to ensure that the program responds to priority needs in a flexible way, that progress is effectively monitored and that the quality of output is maintained.

G. Inputs

20. (a) Government Inputs: Each participating Government would be expected to provide appropriate counterpart staff for the consultants funded under the project and to carry out the preparatory work required (such as data collection and analysis, surveys, institutional studies, etc.). The Government would normally also provide office space, supplies, secretarial services and local transport for the effective operation of the project.

(b) UNDP Inputs: These would include:

Three full time Energy experts for a period of 24 months each. These would comprise an Energy economist/planner a technical specialist and a program/management officer.

Thirty-five months of short-term consultants.

A budget to cover travel and per diem costs for both the full-time experts and short-term consultants

A budget to cover secretarial, administration and other direct costs associated with setting up the program.

Details of these inputs are set out in the attached budget.

- (c) Donor Agency Input: These will be incorporated in the total Energy Sector Management Program as they become available, and the budget document attached as Annex 2 will be revised accordingly.

Sections H through M

Not Applicable.

PART III

21. A. Schedule of Reviews

The project will be subject to periodic reviews by UNDP and the World Bank, in accordance with the UNDP's established policies and procedures.

B. Evaluation

The project will be subject to evaluation in accordance with UNDP's established policies and procedures.

C. Progress and Terminal Reports

The Bank will submit to UNDP semi-annual progress reports and a terminal report upon completion of the project, as well as final reports of all country specific activities funded under the project as they become available.



ANNEX I

The Joint UNDP/World Bank Energy Assessment Programme

Assessments Completed Since Nov. 1980	Assessments in Progress
Bangladesh	Benin
Burundi	Bolivia
Haiti	Ethiopia
Indonesia	Fiji
Kenya	Morocco
Malawi	Nepal
Mauritius	Niger
Papua New Guinea	Nigeria
Rwanda	Peru
Sri Lanka	Senegal
Turkey	Solomons
Zambia	Sudan
Zimbabwe	Togo
	Uganda
	Yemen A.R.

## PROJECT BUDGET COVERING THE UNDP CONTRIBUTION (IN U.S. DOLLARS)

Country : INTERREGIONAL  
 Number :  
 Title : Energy Sector Management Program

				CY83		CY84		CY85	
		SM	TOTAL	SM	TOTAL	SM	TOTAL	SM	TOTAL
10.0	Personnel								
11.1	Energy Expert	24	208,000	6	40,000	12	108,000	6	60,000
11.2	Energy Expert	24	208,000	6	40,000	12	108,000	6	60,000
11.3	Program Management <u>a/</u>	24	208,000	6	40,000	12	108,000	6	60,000
11.4	Consultants	35	360,000	10	102,857	15	154,286	10	102,857
11.99	Sub-total	107	984,000	28	222,857	51	478,286	28	282,857
13.0	Administration								
13.1	Adm. Officer <u>b/</u>		70,000		15,000		35,000		20,000
13.2	Researcher		60,000		15,000		30,000		15,000
13.3	Secretary		39,000		9,000		20,000		10,000
13.4	Secretary		39,000		9,000		20,000		10,000
15.0	Travel		30,000		5,000		15,000		10,000
15.99	Sub-total		238,000		53,000		120,000		65,000
50.0	Miscellany								
52.0	Reports		26,000		8,000		14,000		4,000
53.0	Sundry		2,000		500		1,000		500
50.99	Sub-total		28,000		8,500		15,000		4,500
99	Project Total		1,250,000		284,357		613,286		352,357

a/ This person will liaise with the financial staff of UNDP and potential contributors to the Program. He/She will therefore spend a considerable portion of their time at UNDP headquarters in New York during the first year.

b/ 50% of estimated costs; remainder will be provided under the ESAP.



## OFFICE MEMORANDUM

TO: : Mr. R. Picciotto, EMPDR

March 16, 1983

FROM : D.C. Rao, Assistant Director, EGYEC

SUBJECT: Comments on Energy Policy Paper

1. You will have already received the revised 3/10/83 draft of the Energy Policy Paper, the preparation of which has precluded an earlier response to the most helpful comments you sent us on February 24.

2. Some of these comments have been incorporated in the revised draft. In particular, the discussion of future oil prices in Chapter I has been recast to emphasize the uncertainty surrounding oil price prospects for the short term; nor does the draft make any specific point projections for the exact evolution of oil prices in the longer term. However, what we have said is that notwithstanding current market conditions, the structural parameters underlying the demand and supply of oil, make it extremely unlikely that a substantially lower oil price, say below \$25/bbl in 1983\$, could be sustained over a longer period. <sup>1/</sup> We have also amended the discussion of future energy demand and supply projections to emphasize that the principal purpose of including these projections in the report is to provide a backdrop for the subsequent analysis of investment and policy issues facing the developing countries and that even substantial changes in the projections would have little effect on the priorities identified by that analysis.

3. As far as your other comments are concerned, we agree that more in-depth treatment of agricultural energy issues and of the links between energy taxes and the overall fiscal framework would be desirable. Unfortunately, our current state of knowledge on both these areas is not far enough advanced to enable us to deal satisfactorily with these points.

4. Regarding the role of the Bank in the energy sector, you will note that the current draft of Chapter VI is much less specific than was suggested by the initial outline. This is a reflection of directions from senior management against being too specific in this paper.

Attachment

cc: Messrs. Rovani, Ahmed (EGY),  
Ms. Ribe (EGY)

MAhmed:jl

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<sup>1/</sup> I am attaching a short note on this subject prepared by EPD.



WORLD BANK OUTGOING MESSAGE FORM Telegram, Cable, Telex

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TO: **INTBAFRAD DAKAR, SENEGAL FOR DE RAET.**

RE YOUR 106. HAVE SPOKEN WITH RUSSELL REGARDING POSTPONEMENT OF ENERGY ASSESSMENT REPORT DISCUSSION MISSION. UNFORTUNATELY, THE TIMING OF HIS PHILIPPINES MISSION IS FAIRLY INFLEXIBLE AND ONLY LEAVES WEEK OF APRIL 18 - 24 FREE FOR VISIT TO DAKAR. AS ALTERNATIVE WOULD BE TO POSTPONE MISSION TO LATE MAY, I PROPOSE THAT WE STICK TO ORIGINAL TIMING. HOWEVER, AS WE WOULD ONLY REQUIRE 2 - 3 DAYS OF DISCUSSION ON THE REPORT, I PROPOSE THAT ARRIVE IN DAKAR ON APRIL 19 FOR DISCUSSIONS ON APRIL 20 - 23. GRATEFUL IF YOU COULD CONFIRM WHETHER PROPOSED TIMING IS CONVENIENT FOR THE GOVERNMENT. REGARDS, MASOOD AHMED, ENERGY DEPARTMENT.

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OF  
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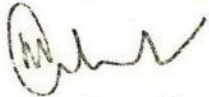
CLASS OF SERVICE: <b>FR/TELEX</b>		TELEX NO.: <b>962-3149</b>	DATE: <b>3/15/83</b>
SUBJECT:		DRAFTED BY: <b>MAhmed:cra</b>	
CLEARANCES AND COPY DISTRIBUTION:		AUTHORIZED BY (Name and Signature): <b>Harold Wackman</b>	
		DEPARTMENT: <b>ENERGY</b>	
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CHECKED FOR DISPATCH			



## OFFICE MEMORANDUM

TO: Mr. Julian Bharier, Chief, EGYEA

March 14, 1983

FROM: Masood Ahmed SUBJECT: Alternative Mechanisms for Channeling Donor Contributions Through UNDP into Energy Sector Management Program (ESMP)

1. Following our discussions with Messrs. Harland, Hillis, Mashler and Potashnik in New York, I am setting below my understanding of the alternative financing mechanisms for potential ESMP contributions.

Contributions into the UNDP Energy Account

2. This appears to be the simplest method. The account is already functioning; contributions can be earmarked for the ESMP as a whole and even for specific sub-activities under the ESMP (groups of countries, special functional areas such as rural energy or power work, etc.). However, this earmarking has to be done through an exchange of side letters or on the basis of a gentlemen's agreement. Administratively, all funds received into the Energy Account are comingled and the UNDP's reporting to donors does not link specific contributions to activities. Any additional reporting required by such donors would have to be done by the Bank outside the UNDP framework and would be recorded in the exchange of letters.

A Separate Trust Fund for the ESMP

3. This fund would have to be established by the UNDP administrator but this can be done relatively easily and quickly (about 4 weeks). The advantage of such a fund over the Energy Account would be that donors could officially ensure that their contributions directly financed ESMP operations. Some donors may require this for their internal reporting. Also some donors are simply not keen on contributing to the Energy Account.

4. However, this method would still not allow donors to officially contribute to specific activities under the ESMP, although an understanding could be recorded in an exchange of side letters between UNDP and the donor agency. The additional reporting arrangements would be the same as for earmarked contributions through the Energy Account.

5. The arrangements become more complex if a donor wants to contribute to specific activities under the ESMP (countries or functions) and needs more than an exchange of letters recording this understanding (to meet their internal legal or reporting requirements for instance). In this case there are three ways of accepting the contribution.

- (i) Establish a Specific Trust Fund to cover only those activities which the donor would finance. This would need a separate justification document and the UNDP Administrator would have to establish the Fund. UNDP does not favor this option for small contributions because each Trust Fund has to be managed separately. There are only 11 Trust Funds in operations now



throughout UNDP.

- (ii) 100 Percent Cost Sharing The donor could participate in a 100% cost sharing arrangement for the covered activities. This is a preferred option to a specific Trust Fund but it would still require the preparation of a separate project document (defining, justifying and costing those activities) and it would have its own budget and administrative arrangement, outside the overall ESMP. If the set of activities was for one country only, this would become a country project requiring the approval of the regional bureau in UNDP and the signature of the Government concerned. Both of these would add to the preparation time and reduce flexibility.
- (iii) Third Party Cost Sharing This arrangement is similar to 100% cost sharing with the exception that the donor would agree to finance 100 per cent of the costs of some specific activities included in an overall regional or global project. This would require the definition and costing of those activities but it would not require the preparation of a separate project document and it would not need prior approval of UNDP regional bureaux or of the Government agencies even if the activities so covered were to take place in only one country. A separate budget would have to be prepared and attached to the existing Global/Interregional Project Document.

#### Conclusions

- 6. (i) General contributions to the ESMP are much easier to handle than contributions for specific activities under the program. We should make this clear to potential donors and point out that the higher administrative costs of the latter are a wedge between their gross contribution and its net productivity.
- (ii) To take account of the problems that some donors face in contributing to the Energy Account, we should take action now to establish a separate Trust Fund for the Energy Sector Management Program with the UNDP. If you agree, I will get a sample Trust Fund Agreement from Mike Potashnik this week and follow up at this end.
- (iii) Where the only way to get a contribution is if this is tied to specific activities/recipient countries, we should try to maximize the number of countries covered under a specific contribution so that we have greater flexibility in allocating funds as appropriate across those countries. We should do this even if this implies a delay in the contribution. For example, one contribution from a donor covering five potential



recipient countries for say \$1.0 million in 1984 is better than five separate contributions of \$200,000 for each country made every two months during 1983. Of course in some cases, individual contributions may be necessary because the donors require the output of one contribution to justify the next.

- (iv) Of the three mechanisms for specific activity financing, we should indicate a preference for third party cost sharing within the overall ESMP Interregional Project which is likely to be in effect soon. This would minimize the additional work and time required to prepare, approve and administer these specific activities separately.

cc: Messrs. Rao, Wackman

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Energy Policy Paper  
Revised 2/24/83  
3/14/83

CHAPTER VI

The Role of the World Bank

The Developing Countries Energy Problem

6.01 The preceding analysis of energy issues has demonstrated that the process of adjustment to higher commercial energy costs is far from over in the developing countries. Despite the major shifts in pricing structures, investment programs and economic policies that have already taken place in many of these countries, much more remains to be done to ensure that energy is used efficiently and that the formulation of future development strategies incorporates the full effects of higher energy costs. Completion of the adjustment process will also require a major increase in the allocation of investable funds into the energy sector, both for energy production projects and for retrofitting programs to conserve energy. Generating additional resources of these magnitudes would be a challenging task under any circumstances, but it will be particularly difficult in the present international economic climate when growth prospects and overall resource availability are both likely to be constrained for the majority of developing countries. Indeed, there is a real possibility that in some of these countries, particularly in the lower income ones which have limited access to commercial sources of finance, the pace of adjustment to higher energy costs may be retarded because of a shortage of investment resources. The resource constraint is likely to be less binding in the middle income developing countries, particularly those which are largely self-sufficient in energy or net exporters of it, but here, too, it is clear that the successful



mobilization of additional resources will be a challenging and high priority task for energy policy makers.

6.02 Along with the efforts to mobilize resources, a second high priority is to strengthen the planning and management capability in the sector. As discussed in Chapter IV, the need to evaluate increasingly diverse and complex energy options, to develop sector investment programs and to solicit large volumes of investment finance from a variety of sources, and to enter into an effective technical and policy dialogue with potential private investors all require a much stronger national energy sector management capability than currently exists in the vast majority of developing countries.

6.03 This twin emphasis on resource mobilization and strengthened sector management will also need to be reflected in the energy assistance programs of international agencies and particularly of multilateral agencies such as the Bank which have an important contribution to make in these areas. Thus, while the remainder of this chapter deals with the response of the Bank to these issues, many of the conclusions are equally applicable to other international agencies which share the objective of supporting efficient energy development in these countries.

#### The World Bank Energy Program

6.04 The principal objective of the World Bank's energy program is to assist developing countries in defining and implementing an appropriate energy sector development and management strategy. The doubling of oil prices in 1973 and again in 1979/80 radically changed the energy situation of these countries by increasing, on the one hand, the urgency of tackling the problem of unsustainable energy import bills for the vast majority of OICD's and by vastly expanding, on the other hand,

the range of economically viable indigenous energy development options. In response to their changing priorities, the Bank significantly increased and diversified its own energy lending and began supporting the development of petroleum, coal and other primary energy resources which it had previously not financed. (See table VI.I below). This process, which was approved by the Bank's board on successive occasions (See Box ), also led to a growing emphasis on the better management of energy demand and on providing technical assistance to developing countries in the evaluation of major energy issues and options. In collaboration with the UNDP, the Bank embarked upon a 60 country program of energy sector assessments designed to provide a diagnosis of the main energy issues in the country and to serve as a framework for investment and policy decisions by Government and external aid agencies alike (See Box ...). The Bank also stepped up its efforts to function as a catalyst in mobilizing additional funds for energy development in the LDC's from potential private and public capital sources.

6.05 As a result of these developments, the Bank now has a large and diversified energy lending program and is a major source of policy advice and technical assistance to its borrowers in their efforts to strengthen the institutional and management capability of the sector. It uses a variety of instruments for providing this assistance, including financial support for energy development projects; technical assistance in evaluating nation energy options and priorities and in carrying out preinvestment studies; management assistance at both the agency and sectoral levels; and an ongoing dialogue on important energy issues as part of its overall economic work. Although these activities are often carried out as discrete tasks, the distinguishing features of the Bank's



involvement is the emphasis on ensuring that all these elements are part of an integrated strategy and a long term commitment to improving the energy prospects of these countries. Thus, in each country the determination of the specific components of the Bank's energy program starts with an analysis of the energy sector priorities for that country, taking into account its broader development context. However, one feature which is common to the Bank's work in all countries and at all stages of the energy development process is an essentially pragmatic and problem solving approach combined with an objective technical evaluation of the comparative benefits of alternative energy development strategies.

#### Resource Mobilization

6.06 The Bank's most direct contribution to mobilizing resources for LDC energy development is in the form of its own lending for energy projects. This has grown substantially in recent years, doubling from \$1.5 billion in FY 1979 to an estimated \$3.8 billion in FY83. Although this is still a small fraction of the total investment requirements for energy development in the LDC's, it has made the Bank the single most important official source of external capital for energy development in the LDC's. In particular in the poorer developing countries which have limited access to commercial financing sources, the \$0.7 billion of highly concessional IDA financing provided since 197 has made a major contribution to underwriting the process of structural change in the energy sector which will lead to an alleviation of their present crippling dependence on expensive imported oil. Over the 1975-80 period, the World Bank provided almost a third (check) of the total publicly guaranteed borrowing for energy development in the low income developing countries, much of its on IDA terms.

Table VI.1 - World Bank Energy Lending: a/ FY1979-1982  
(No. of Projects and \$ million)

	FY79		FY80		FY81		FY82		Total FY79-82		Percent FY79-82	
	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount
Power	18	1354.9	25	2392.3	17	1323.0	21	2131.2	81	7201.4	58	71
Coal	-	-	1	72.0	1	10.0	3	227.0	5	309.0	4	3
Oil and Gas	4	112.4	13	385.0	12	649.5	14	539.3	43	1686.2	31	17
of which:												
Exploration	-	-	5	35.5	6	32.5	8	36.3	19	104.3	14	1
Promotion	-	-	3	96.0	3	70.0	1	20.0	7	186.0	5	2
Exploration	-	-	2	59.5	2	462.0	3	303.0	8	827.0	6	8
Oil Development	1	2.5	1	194.0	1	85.0	2	180.0	9	568.9	6	6
Gas Development	3	109.9										
Energy-Related Industry	<u>1</u>	<u>58.0</u>	<u>1</u>	<u>29.0</u>	<u>3</u>	<u>364.0</u>	<u>6</u>	<u>460.4</u>	<u>11</u>	<u>911.4</u>	<u>8</u>	<u>9</u>
Total	23	1525.3	40	2878.3	33	2346.5	44	3357.9	140	10,108.0	100	100

a/ Excludes fuelwood.



In addition to its direct participation in energy financing, the Bank has made a major effort to mobilize resources from other potential financing sources. Within the countries conceived, adequate local resource generation has been addressed through pricing and financial conditions attached to Bank loans and through the broader dialogue on sector issues with national policy makers. A special effort has also been made in the energy sector to mobilize additional external resources through cofinancing and through the identification of opportunities for direct private investment in LDC energy development. The issues and constraints associated with these efforts are dealt with below.

Emphasis on Cofinancing

6.07 The emphasis placed by the Bank on the cofinancing of its energy projects stems from three factors. First, from a recognition of the fact that the substantial investment requirements for energy development in the LDC's require a major effort in mobilizing funds from all potential sources. Second, because projects in the energy sector are more likely to attract cofinancing than in many other sectors because of the wide interest in energy development by both private and official financing agencies. And third, because projects supported by the Bank offer attractive opportunities for cofinancing because of a variety of reasons: the project will have been thoroughly appraised from the technical, financial, economic and institutional viewpoints; the execution of the project will be supervised in detail by qualified Bank staff; the financial participation of the Bank may impart greater stability to the relationship between the borrower and other financing agencies; and under recently introduced arrangements it is possible for

the Bank to take the latter maturities in a joint syndication, thereby allowing commercial lenders to acquire relatively early repayment of their loans. Given these factors, the Bank has actively sought to mobilize cofinancing funds for its energy projects in collaboration with the borrowing country concerned. These efforts have met with some success. During the FY 1979-82 period, the \$        billion of Bank lending for energy was associated with \$        billion of cofinancing from bilateral and other multilateral agencies, export and suppliers credits, as well as commercial banks and private sources. As shown in Table 6.2 below, the "average" Bank energy project over this period had a total cost of US\$ 322.6 million with a foreign exchange component of 48%. The Bank financed an average of 22% of the total cost (46% of foreign exchange cost) while external cofinancing covered 25% of the total cost (51% of foreign exchange cost) respectively. On average, therefore, the government and/or the local sponsor financed the entire local currency cost plus about 3% of the foreign exchange cost of these projects. However, there are marked differences in financing patterns between pre-development/engineering type projects and development type projects as well as among projects in the various energy subsectors (i.e. petroleum, power, coal, etc.). Pre-development and engineering projects (average cost US\$ 16 million) have a higher proportion of foreign exchange cost (72% average). Because of their higher risks, small loan amounts and the need for speedy implementation these projects are not very attractive to many financing agencies and the Bank has had to finance a larger share of their total cost than is the case for development projects.



Table VI.2 - Financing of World Bank Energy Projects  
(FY 1980 - FY 1982)

<u>Sector</u> <u>1/</u>	Share in Total Project Cost (%)		Share in Foreign Exchange Cost (%) <u>2/</u>	
	Bank/IDA External	Other	Bank/IDA External	Other
Oil and Gas (43)	30	45	38	57
Pre-development (28)	66	8	88	11
Development (15) <u>2/</u>	27	48	34	61
<u>Power</u> (83)	23	24	53	54
<u>Coal</u> (5)	<u>20</u>	<u>25</u>	<u>32</u>	<u>42</u>
<u>All Energy Projects</u> <u>3/</u> (138)	22	25	46	51

1/ Numbers of projects in brackets.

2/ Financing of a share of local costs by external agencies can raise the total percentages in these columns above 100%.

3/ Includes 'other' energy projects

Source: World Bank

6.08 In terms of sectoral patterns, the highest degree of cofinancing has been associated with the oil and gas program where every \$1 of Bank financing was matched by \$1.49 from other cofinanciers. In this sector, the Bank has been successful in mobilizing all form of cofinancing for gas development, but so far, bilateral/multilateral sources have not contributed as much to oil development projects as in the gas and power area. The cofinancing ratios for the other energy subsectors were 1.28:1 for coal projects, 1.03:1 for power projects and 0.96:1 for other energy projects (refineries, biomass, etc.).

6.09 The extent of cofinancing is an important feature of Bank projects but three important caveats deserve mention. First, it should be pointed out that in some cases these co-financing ratios lose their meaning because the project is best seen as part of an ongoing program of investment to achieve certain objectives. In such situations, the Bank may select a subset of the investments which is important and in which it has a special contribution to offer. Bank finance may represent a relatively high share of the "project's" costs while remaining a relatively small share of the costs of the whole investment program (e.g. Bombay High II). Moreover, even if a project is highly successful in attracting co-finance, there is a minimum participation by the Bank that is necessary to ensure that the Bank's judgement is accorded due weight in decisions affecting the project and, further, that the Bank is able to seek agreements with the Government and concerned enterprises on sensitive matters affecting sector policy and institutional arrangements. In some cases, it may be necessary to apply this criterion not only to the Bank's share of the whole project but to its share in specific components of the projects that will enable the Bank to be closely involved in the project until its completion, although these components may be particularly attractive to other credit agencies that lack the technical expertise to supervise project execution (e.g. Peru II). In such cases, the Bank may be required to finance a higher proportion of project cost in order to assure satisfactory project completion.

6.10 The second caveat is that while individual projects may offer useful vehicles for mobilizing cofinancing, the decision on the



appropriate pattern of energy development from various capital sources is one that must be taken at the country level. In some countries, the overall foreign financing pattern and debt service ratios may be such that extensive commercial financing for a particular energy project may not be desirable from a national viewpoint even though it is feasible from the project or project executing agency's standpoint. In these cases, the size of the Bank's participation in financing an energy development project will be determined as much on country creditworthiness and macro-financing grounds as on project financing criteria alone.

6.11 Finally, it is important to recognize that in a great many developing countries the prospects for a substantial expansion in commercial bank lending for any sector are severely limited because of poor country creditworthiness considerations. The vast majority of lower income developing countries fall into this group but as recent events have demonstrated, this constraint can also apply to some of the middle income developing countries whose capacity to service a rising external debt is becoming increasingly strained. For this group of countries, attractive project economics will seldom override the limits imposed on commercial lending by the perceptions of country risk and creditworthiness. And yet these are also the countries which frequently have the most pressing need to restructure their pattern of energy supply by developing indigenous energy resources. To help them achieve this important transition the Bank and other official financing agencies will often need to provide a much larger share of energy project costs.

6.12 The use of project or non-recourse financing is one way of mobilizing additional commercial finance in these countries. However, as discussed in paras. 5... above, the conditions necessary for successful non-recourse financing of energy projects (internationally known and respected project sponsor, reasonable country credit worthiness perception and a preferable export orientation of the project) are likely to prevail in only a limited number of countries and for certain specific categories of projects. Thus, while this vehicle should be promoted, particularly in developing the large, export oriented projects in the petroleum and coal sectors, it is unlikely to have widespread applicability in the developing countries in the near future.

#### Promoting Direct Private Investment

6.13 In addition to the emphasis on cofinancing, the Bank's Energy program is also oriented to promoting direct equity investments into LDC energy development by the international energy industry. The largest potential for this is, of course, in the oil and gas sector where the international petroleum industry has traditionally made a major technical and financial contribution in the developing countries. A variety of instruments are used to pursue this objective. Exploration promotion projects are expressly designed to rekindle private sector interest in exploration and development by providing a better geological data base, rationalized and clearer incentive and contractual frameworks and a stronger legal and institutional capability in the sector.

6.14 Other promotional vehicles are also utilized. Exploration drilling and reserve audits financed by the Bank often have beneficial side effects. For example, delineation drilling to demonstrate



sufficient gas reserves to justify an export pipeline to Brazil had the additional effect of [to be filled in]. Sometimes infrastructure investments financed by the Bank help firm up private involvement in exploration and appraisal. In Thailand, the Bank supported gas pipeline has rekindled private exploratory interest in potential gas deposits situated adjacent to the pipeline. In development projects, Bank financing of the share of national oil companies in joint ventures with international partners, helps to overcome a frequent stumbling block in the development of these projects. Finally, the Bank may issue "letter of cooperation" and other arrangements to reduce the perception of political risk when asked to do so by the host Government and the private investor concerned.

6.15 In addition to these specific instruments, the Bank also assists in accelerating the pace of private investment in the energy sector by identifying and discussing with national policymakers broader sectoral issues which may be acting as obstacles to this expansion. Producer pricing for gas and oil, particularly as it relates to secondary recovery from producing fields is one issue which is frequently a subject of analysis. The country's overall approach to private energy investment and the allocation of prospective acreage between the private sector and the national oil company is another important issue.

6.16 In carrying out this dialogue the Bank's primary objective is to accelerate the pace of energy development in its member countries consistent with their broader development objectives. The Bank recognizes the crucial role of the international energy industry in achieving this objective. However, its experience has also demonstrated

that in a number of circumstances the activities of the private sector alone may simply not be adequate in scope or timing. Those circumstances, which were discussed in Chapter III above, include the limited interest of international oil companies in developing small oil fields or gas resources which have little export potential, the effect of current corporate cash constraints on the size of industry exploration investments in the developing countries, the unwillingness of the industry to invest in countries perceived as high political or economic risks, or a simple divergence in the priorities attached to a particular energy development project by an industry with global investment options and the country for whom this may be the only prospect for improving its energy supply situation. These limitations may necessitate the allocation of public resources to energy development in a number of countries and as a development institution the Bank is ready to support these national efforts when it is convinced that they are an appropriate feature of the country's optimal sectoral and national development strategy.

#### Strengthening Energy Sector Management

6.17 Alongwith its financial involvement, the Bank has made a major effort to assist its member countries in strengthening the management capability in the energy sector. In doing this it has built upon traditional strengths which charaterized its work in all the sectors in which the Bank is involved. These can be classified into three groups. First, the contribution made at the project level in terms of competent project selection, formulation and implementation. Second, the contribution made in strengthening indigenous institutions and developing



an effective sector planning and management capability. And third, the assistance provided in analyzing and resolving key sector issues and in formulating an appropriate overall sector development strategy. These points are dealt with in the following sections.

#### Project Selection, Design and Implementation

6.18 A traditional objective of Bank financing is to ensure that the projects it finances are well designed, incorporate proper technology, are implemented competently and put into position an agency capable of not only implementing the project but subsequently running and operating it. This is particularly important in the energy sector where technology is evolving rapidly, there is an absence of strong institutions in many countries, and where the cost of delay or wrong choice is high. The Bank's approach to project financing has therefore been qualitatively different from other financing institutions. To ensure that a proposed project conforms to overall national sector priorities, its preparation is preceded by a review of sector objectives, priorities and investment options (often in the context of an energy assessment). Sometimes this work leads to the selection of a project which had previously not been considered by the host country or had been rejected due to incomplete analysis. It can also identify priority investment opportunities which have not been taken up by other financing sources (such as commercial banks or multinational energy companies) because the investment while attractive from the country's point of view, ranks low according to the global criteria used by these agencies.

6.19 After a particular Bank project has been identified, considerable effort is expended to ensure that its design represents the

least cost solution. In the energy sector, this frequently implies an analysis of alternative development options for the system as a whole because of the strong interlinkages and complementarities that exist among individual projects. Bank staff continue to be closely involved during project implementation. Regular supervision of the project sites enables the Bank to help resolve technical problems, insist on continued budgetary support for agreed financing of local currency expenditures and ensure that institutional arrangements are modified if necessary for the timely and cost effective completion of the project. Bank staff also assist the borrower in preparing terms of reference for consultants used in project preparation or implementation, in reviewing their qualifications and evaluating their work. At all stages the Bank seeks to ensure that the borrower's interests are safeguarded while at the same time, bringing to bear on each decision an objective perspective and the experience gained by the Bank in dealing with similar problems in other countries.

6.20 A key contribution by the Bank in the project context is the transfer of technology to the borrower. Special efforts are made to incorporate appropriate technology in the project design in an endeavor not only to enhance project benefits but in the hope that the entire sector may benefit there from. Transferring technology is an underlying objective of a large number of Bank financed energy projects. For example, the Bank financed hydrocarbon projects in China would strengthen the energy base by increasing oil production; more importantly these projects would upgrade the level of technology over a wide range of oil field activities, such as acquisition and processing of geophysical data,



drilling and production methods, reservoir engineering and techniques relating to enhanced oil recovery. The objectives and modes of technology transfer in Bank energy projects are discussed briefly in Box 4.1.

#### Institutional Strengthening

6.21 An equally important objective of Bank involvement is to strengthen the indigenous sector management capability in the country. At the project level, this means helping Governments to design implementation arrangements which will help create a corpus of managers to subsequently maintain, operate and expand the facilities provided under the project. Sometimes this approach results in slower implementation of the particular project that could have been attained if the responsibility for project execution has been handed over in its entirety to e.g. experienced expatriate engineering contractors, but the Bank often consciously chooses to give up short term gains in project implementation schedules in favor of securing longer term benefits as well as the development of stronger indigenous institutions (e.g. Cairo gas distribution). To accomplish this, many projects include the provision of technical assistance to address institutional weaknesses. Studies have also been financed and systems put into place under Bank projects for improving management information, budgetary control and accounting and financial management. The Bank has also stepped up its program of technical assistance in energy at the sectoral level. In particular, the Energy Sector Management Program (described in Box ...) provides a good example of a flexible and quick response to an emerging need identified through both project and sector work in these

countries. Although the program has only just got underway, about a dozen developing countries have already requested assistance to analyze institutional issues and to strengthen their sector management capability. This type of assistance is also being increasingly provided under the aegis of regular Bank investment projects. Nearly all the petroleum exploration promotion projects financed by the Bank, for example, provide assistance at the sectoral level in setting up an indigenous capability to legislate and monitor the petroleum exploration and development activities in the country.

#### Sectoral Perspective

6.22 The integrative analysis of macroeconomic, sectoral and project priorities is an intrinsic part of the Bank's work. However, the object of this analysis goes far beyond the identification of appropriate investment projects for Bank financing. Rather, this analysis and the ensuing dialogue with national policymakers covers a wide range of sectoral issues such as demand management and pricing, interfuel substitution, investment planning, resource mobilization and the respective roles of public and private agencies in the development of the sector.

6.23 The Bank uses a variety of instruments for carrying out this work. Energy Assessment Reports and other sector studies are one vehicle for analyzing and discussing important sector issues with member governments. An important contribution of the former has been in helping to define "energy" as an "integrated sector" in many developing countries. By highlighting the interaction that exists among policies and programs in the various energy supply subsectors (e.g. fuelwood,



coal, petroleum, electricity, etc), they have served to identify previously neglected issues of coordination among the agencies responsible for these subsectors.

6.24 Another important vehicle for addressing broad sectoral issues is through the involvement in successive investment projects. At project appraisal and negotiation, agreements are often sought with the government and/or the concerned energy enterprises on issues of broad sectoral relevance as well as those affecting the project more directly. In energy projects the pricing of petroleum, power and coal is frequently discussed in detail and pricing objectives are set on the basis of an analysis of economic and financial implications of alternative price structures. Specific remedial measures to improve the financial performance of the major energy supply agencies are also generally discussed and agreed with the borrower in the context of project negotiations.

6.25 A good example of the contribution that can be made to resolving sectoral issues through the vehicle of project financing is provided by the history of the Bank's involvement in the petroleum sector in Egypt. In 197 , the Government of Egypt requested the Bank to participate in the financing of a project for the recovery of associated gas which was flared in the Gulf of Suez. The project was relatively straightforward and its economics were attractive. However, in the course of the evaluation of the project, the Bank identified:

- (i) a much larger potential for utilization of associated and non-associated gas than evaluated by the Government;

- (ii) areas which were gas prone and whose exploration had been neglected by private oil companies, partly because of the limited local gas market (and the large infrastructure investment and long lead-time required to develop such a market), as well as inadequate gas pricing provisions, and partly due to the oil companies giving higher priority to finding exportable oil;
- (iii) the need to step up oil exploration as well as substitution of gas for oil consumed domestically to slow down the decline in oil exports; and
- (iv) the need to rationalize pricing policies.

As a result of this analysis studies were commissioned to define what further action the Government should take in the sector. The main result is that years after the project was initiated, the Government has at its disposal all the necessary elements to define a long-term gas development strategy and to implement it. Positive measures have already been taken to revive exploration in gas prone areas and correct some of the pricing problems. Considerable progress remains to be made, particularly in the field of energy pricing, but the foundation for a long-term development strategy has been laid which should significantly improve the contribution to the petroleum sector to the overall economic development of Egypt.

6.26 Finally, in addition to sector reports and project work the Bank influences energy policy in its member countries through the dialogue associated with Structural Adjustment Lending. Many of the SAL's approved by the Bank's Board since have had a major



focus on the restructuring of policies and programs in the energy sector. This emphasis is expected to continue, because for many developing countries, changes in this sector will effectively determine the success of their overall structural adjustment efforts.

6.27 This multi-dimensional involvement of the Bank in the energy sector has demonstrated the need for using a flexible array of instruments to assist member countries in developing an appropriate energy sector management strategy. However, the success of such efforts depends on two important factors. First, the policy advice that the Bank offers is accompanied by a financial commitment to underwrite a part of the investments required to overcome a difficult period of transition in the sector. This financial support provides both a degree of leverage and allows for a much greater degree of day to day involvement in assisting the line agencies in identifying and resolving problems as they arise. Indeed, experience has shown that policy advice divorced from operational involvement is seldom as effective or as relevant as it needs to be. Governments recognize this fact and demonstrate it in their receptivity to such advice. The financial involvement of the Bank also serves to underpin the credibility of its advice, which is the second major factor underlying the success of its efforts. However, the high degree of credibility which the Bank enjoys in developing countries is not derived from its financial support alone. Rather, it has to be earned over time in each sector by virtue of the quality of its work and the problem solving nature of its approach. In particular, when offering specific advice of a technical nature to energy supply agencies in these countries, the Bank's staff often have to persuade line managers that

their agencies have weaknesses which need outside assistance to be rectified. This too requires a high degree of professional competence to ensure that the Bank's advice is perceived as credible.

Future Scope of the Bank's Energy Program

6.28 The analysis in this Report confirms the need for massive energy investments by developing countries and the scope for the World Bank to play an important role in assisting member countries in rationalizing their energy strategies, identifying, designing and implementing priority investments and improving their sectoral management and policy framework. Although the Bank is the largest and most active agency involved in energy lending in developing countries, its contribution is small relative to the investment requirement and will continue to be severely constrained by resource availability.

6.29 In order to ensure that lending for high priority investments outside the energy sector is not curtailed below acceptable levels, it has become necessary to constrain the Bank's energy lending to about one-quarter of the total. On current assumptions concerning the overall resource position of the Bank, total lending for all sectors is projected at about \$16 billion per year (including about \$5 billion of IDA, in constant 1983 dollars) over the next few years. <sup>1/</sup> Consequently, energy lending by the Bank will be of the order of \$4 billion i.e. at approximately the same level as in FY83 in real terms. This will

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<u>1/</u>	<u>FY83</u>	<u>84</u>	<u>85</u>	<u>86</u>	<u>87</u>	<u>FY83-87</u>
Projected lending - Bank	11.2	11.2	11.7	12.3	12.9	59.2
(1983 \$billion) - IDA	3.1	3.0	4.4	4.7	5.0	20.2

Source:



represent approximately 3% of the investment requirements identified in Table V.7.

6.30 Although aggregate lending by the Bank will be constrained, it is important that the Bank's energy activities continue to be diverse and responsive to developing countries' needs. Through project financing, technical assistance and sector assessments, the Bank will endeavour to maintain its dialogue with member countries on sectoral policy issues, provide assistance for sector management, institutional strengthening, and implementation of rational programs of investments of demand management and of commercialization of technologies particularly suited for developing countries which are unlikely to be developed elsewhere. The subsector composition of the Bank's energy lending and the content of its technical assistance activities will depend on developing countries' needs, with priorities being assessed from the perspective of each country and the potential contribution by the Bank not only in mobilizing financial resources but in a wide range of other dimensions.

Proposed Scope of the Bank's Energy Program

6.28 The growth prospects of the developing countries depend on many factors, but one of the central ones will be their ability to successfully restructure their energy supply and consumption patterns in response to higher energy costs. Until this process of transition has been successfully completed, energy will continue to be a priority sector in the Bank's overall program.

3/14/83

UNITED NATIONS DEVELOPMENT PROGRAMME

Interregional Project Agreement

Project Document

Title: Energy Sector Management Programme -  
a Technical Assistance Programme  
linked to the Energy Sector  
Assessment Program

Duration: 2 years

Starting Date: April 1983

Number:

Sector: Energy

Government Cooperating Agencies:

To be identified in each  
of the participating  
countries.

Date of Submission: March 1983

Executing Agency: The World Bank

Government Contribution: (In kind--See Section IIG)

UNDP Contribution: \$1,250,000

Approved: \_\_\_\_\_  
On behalf of Executing Agency

Date: \_\_\_\_\_

Approved: \_\_\_\_\_  
On behalf of the UNDP, Division for  
Global and Interregional Projects

Date: \_\_\_\_\_

Approved: \_\_\_\_\_  
On behalf of UNDP, Energy Account

Date: \_\_\_\_\_



PART I

Legal Context

1. This agreement will become effective when signed on behalf of the United Nations Development Programme and the World Bank. Cooperating arrangements with participating countries will be undertaken through exchange of letters at which time the respective Basic Agreement between Governments and the United Nations Development Programme shall take effect.

PART II

A. Development Objectives

2. The long term objective of the Energy Sector Management Programme, of which this project constitutes the initial phase, is to enable developing countries to successfully complete the transition to an era of high cost energy by strengthening their capability to plan and manage all types of energy projects within the framework of an integrated sector development strategy.

B. Immediate Objectives

3. The immediate objective of the Energy Sector Management Programme (ESMP) is to provide timely and well focussed technical assistance to participating developing countries to help them implement a broad range of recommendations made by the Energy Sector Assessment Reports in four major areas: sector management, policy formulation and institutional strengthening; energy efficiency improvements; rural and renewable energy development; and training and manpower development.

4. The immediate objectives of this project are: (i) to review the technical assistance requirements in countries for which assessment

reports have been completed or are under preparation and to identify how these requirements could be met from the various bilateral, multilateral and other agencies; (ii) to initiate ESMP operations in priority countries where such assistance is urgently required and has been requested by the Government; (iii) to evaluate actions which have been taken in the wake of the energy assessments and identify future work; and (iv) in light of the above, to prepare a detailed medium term work programme for the various components of the ESMP.

C. Special Considerations

5. This project builds upon and is, in effect, defined by the results of the Energy Sector Assessments Programme which is being executed by the World Bank and financed jointly by the UNDP and the World Bank under the interregional project "Assessment of the Investment and Technical Assistance Needs in the Energy Sector." (Project INT/80/009).

D. Background and Justification

6. By the end of the 1970s most developing countries found that they had to deal with new and massive problems of adjustment in the energy sector. However, decisions on the substitution of imported oil by cheaper indigenous resources or other types of imported fuels were by no means easy to make. There were great uncertainties about domestic energy resource potential, about the types of technologies which could be adopted for the production, distribution and use of different fuels, about the availability and cost of finance for energy resource development and the time required to prepare and implement appropriate projects. Moreover, in most developing countries comprehensive energy sector management was in a rudimentary state. Basic information, for



example, on demand patterns and growth, was poor, little of the preinvestment work necessary for effective decision making had been carried out and there was limited analysis of policy issues and of the mechanisms for coordinating the actions of the various users and producers of different types of energy. While many countries clearly needed to improve the efficiency of energy use there was little experience or technical capability in this area.

7. As a first step in response to this situation, the World Bank and the United Nations Development Programme in November 1980 jointly launched a 60-country Energy Sector Assessment Programme designed to provide a rapid diagnosis of the major energy problems faced by the developing countries and an evaluation of the options for solving these problems. Since the Programme began, 13 assessments have been completed, a further 12 are in various stages of preparation and 12 are planned to start in the next year.

8. The response to the Assessment Programme has been strong, with the number of requests to date from Government in excess of the 60 originally envisaged. Many Governments already have begun to use these reports to clarify their sector strategy and prepare solutions to major problems. The reports are also being used increasingly by many agencies to help them in developing their own assistance programmes for these countries.

9. The successful completion of a number of Energy Assessment Reports has highlighted the urgent need for follow up assistance to ensure that priority issues identified by these reports are in fact effectively addressed. Because of their essentially diagnostic nature,

these reports often identify various follow up activities requiring further assistance. This assistance could either be for detailed analysis of particular policy or investment options leading up to prefeasibility studies for potential projects; or it could be aimed towards rectifying weaknesses in the institutional and management framework for the sector. Some of this assistance can and is being provided by other donor agencies active in the field; indeed, one of the objectives of the assessment reports is to act as a catalyst in mobilizing such assistance. However, in a number of important areas additional effort is required because the existing mechanisms are either inadequate or not sufficiently flexible. A reflection of this is the increasing number of requests from countries where assessments have been carried out that the UNDP/Bank assessment team continue to provide independent and objective policy and programme advice and support in helping to implement the recommendations of completed assessment reports. A few of these requests have been accommodated to date by reallocating resources from other UNDP/World Bank activities, but a growing file of requests from other countries cannot be financed from existing resources. The proposed ESMP, which is described more fully in a joint UNDP/World Bank brochure of November 1982 1/ has been developed in response to this demonstrated need. The massive need for investment and the related planning pre-investment work in the energy sector form the basic justification for the program and for the partnership of the UNDP and the World Bank in executing it.

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1/ The Joint UNDP/World Bank Energy Sector Assessment Programme and Energy Sector Management Programme: A Progress Report. November 1982.



E. Output

10. The output of the project, will essentially be the tangible impact in the countries involved in improved policies, investment plans and priorities, project preparation, energy efficiency, training programmes and institutional arrangements. In addition, the governments will receive two types of reports, as appropriate:

- (i) project descriptions and pre-feasibility studies, including justification and terms of reference for feasibility studies and recommendations for further project preparation, financing and other actions; and
- (ii) technical/management assistance studies including evaluation and recommendations on investment programmes, policy/institutional changes, further technical assistance programmes, and training programmes, with proposals for financing and other actions.

F. Activities

11. The full Energy Sector Management Programme comprises four major inter-related activities: (i) Energy Management Assistance Programme; (ii) Energy Efficiency Programme; (iii) Rural/Renewable Energy Programme; and (iv) Manpower and Institutional Development Programme:

(i) Energy Management Assistance Programme

12. This programme would enable the government to draw on Bank and/or UNDP staff resources, basically the same types of expertise as has been used in the assessment process, to help it strengthen the capability

to effectively manage its energy sector and coordinate external assistance. If the government so requests, the process of helping the country could include:

- (a) assisting the government in improving its capacity for sector management through technical advice and support for the country's energy planning and management organization; technical assistance for establishing and maintaining an appropriate energy data base; and definition, preparation, supervision and evaluation of selected pre-feasibility studies and project proposals.
- (b) defining the specific requirements for technical assistance and pre-investment activities, including, e.g., the objectives, work plan and required inputs for both the government and external contributions in a format the government can use in discussion with official bilateral and multilateral financing agencies or with interested private investors;
- (c) assisting the government in developing a medium-term investment plan and an associated portfolio of project profiles for the major projects;
- (d) helping the government identify sources of finance, both public and private, for each of the follow-up activities identified during the assessment. This can include participating in meetings of aid consultative groups or UNDP Round Tables for the least developed countries, arranging special meetings or seeking financing through bilateral discussions with individual financing agencies;



(ii) Energy Efficiency Programme:

13. Improving the efficiency of energy use has substantial potential and high returns in almost all developing countries. An Energy Efficiency Programme has therefore been designed which would include:

- (a) assistance to governments in the establishment of a national energy efficiency capability, including manpower development and institutional strengthening, the development of appropriate policies and programmes for managing energy demand and the implementation of energy audits in the industrial, transport and other sectors with the objective of identifying energy savings opportunities and providing recommendations for achieving these.
- (b) assistance in preparing pre-feasibility studies of potential energy saving investments in economic subsectors where energy saving potential has already been identified. This includes a preliminary survey of the subsector to pinpoint the most promising energy conservation investment projects and the preparation of technical and economic pre-feasibility studies leading to the preparation of energy conservation investment projects for implementation by the appropriate financing sources.
- (c) Power System Loss Reduction. This would identify and quantify efficiency improvement requirements in electric power systems in countries which are willing to take steps to effectively reduce power system losses. Individual system improvement projects would be identified and

subsequently prepared to the point where they would be suitable for financing by the World Bank, UNDP or other multilateral and/or bilateral institutions. Preparatory work for this component has already been financed from the UNDP Energy Account in 1982.

(iii) Rural/Renewable Energy Programme:

14. The energy assessment missions have emphasized the need for help in strengthening institutions, policies and practical programmes for new and renewable energy resources, particularly in the rural sector. In addition, a variety of pilot projects has been identified and these need to be evaluated and implemented before major investments can be made in renewable energy supply and conservation. These projects are relatively small-scale but heavy staff inputs are required for their preparation and supervision. While many donor agencies have expressed interest in providing funds for the projects themselves a mechanism is needed by which expert preparation and supervision resources can be provided to assess the performance of pilot projects and identify their investment potential, as well as to develop the necessary skills in the country to continue with this work. The proposed Rural/Renewable Energy Programme is designed to meet this need. It will cover activities flowing from the Assessment Programme and provide a focus for rural/renewable energy activities as well as a means of ensuring that experience gained in pilot projects is disseminated to all concerned countries. The criteria for involvement in specific pilot projects will be the Government's commitment to an appropriate institutional framework and to the potential follow-up investment as part of a national programme.



(iv) Manpower and Institutional Development Programme

15. The Assessment Programme and other work done by various UN agencies and the World Bank have identified a critical need for supporting manpower and institutional development in the energy sector. The other components of the Energy Sector Management Programme will address these problems in their relevant areas (sector management, energy efficiency, rural/renewable energy), and this integrated approach will be the most effective way to address certain specific training and institutional development needs. However, there are some types of needs that will not be fully covered in this way, and a supplemental manpower/institutional programme is therefore required.

16 This activity may include the following:

- diagnoses of organizational/managerial/manpower problems in key sector institutions with recommendations and preparation of terms of reference for further action;
- in-country training programmes to meet specific specialist needs (energy planning, energy economics, finance, technical specialities);
- workshops and seminars involving technical experts from various developing countries to exchange ideas and experience;
- short-term external training courses in various specialities (technical, economic, etc.);
- secondment of key individuals to foreign energy sector institutions and financing agencies;

17. As shown in the following table the full scale operation of the Energy Sector Management Programme would entail a total resource allocation of \$6 million in 1983 rising to \$11 million by 1986 (all in 1982\$).

ENERGY SECTOR MANAGEMENT PROGRAMME  
ESTIMATED FINANCIAL REQUIREMENTS  
1983-86  
(\$ million in 1982 prices)

	1983	1984	1985	1985	TOTAL
Energy Management Assistance Programme	1.50	1.50	2.00	2.00	7.0
Energy Efficiency Programme (industry, transport and major energy-using sectors)	3.00	5.00	5.50	5.50	19.00
(Power Loss-Reduction Project)	(2.00)	(3.50)	(3.50)	(3.50)	(12.50)
Rural/Renewable Energy Programme	(1.00)	(1.50)	(2.00)	(2.00)	(6.50)
Manpower and Institutional Development Programme	1.00	1.50	2.50	3.00	8.00
	<u>0.50</u>	<u>0.50</u>	<u>0.50</u>	<u>0.50</u>	<u>2.00</u>
TOTAL	6.00	8.50	10.50	11.00	36.00

18. As the full extent of these resources has yet to be mobilized, UNDP and the World Bank propose to adopt a phased approach in developing the programme. This project document which covers the initial phase of the Program, would enable the operation to begin on a limited scale. It would allow the executing agency to recruit a core team of energy planners, economists or technical specialists for a two-year period and to respond to priority requests for assistance in some of the countries where assessments have been carried out or are under preparation (see Anne 1 attached). Detailed work programmes in each of these countries are being worked out in line with the recommendations of the assessment reports, the requests from Governments and the availability of potential



financing sources. This project would also enable the preparation of a detailed work programme for the full scale operation of the Energy Sector Management Programme which would be used as a basis for discussion with potential donors who could contribute additional resources for financing these operations.

19. Although there are four broad "components" to the programme, it is an integrated programme to be managed as such, in the same manner as the Energy Sector Assessment Programme. This is essential to ensure that the program responds to priority needs in a flexible way, that progress is effectively monitored and that the quality of output is maintained.

G. Inputs

20. (a) Government Inputs: Each participating Government would be expected to provide appropriate counterpart staff for the consultants funded under the project and to carry out the preparatory work required (such as data collection and analysis, surveys, institutional studies, etc.). The Government would normally also provide office space, supplies, secretarial services and local transport for the effective operation of the project.

(b) UNDP Inputs: These would include:

Three full time Energy experts for a period of 24 months each. These would comprise an Energy economist/planner a technical specialist and a program/management officer.

Thirty-five months of short-term consultants.

A budget to cover travel and per diem costs for both the full-time experts and short-term consultants

A budget to cover secretarial, administration and other direct costs associated with setting up the program.

Details of these inputs are set out in the attached budget.

- (c) Donor Agency Input: These will be incorporated in the total Energy Sector Management Program as they become available, and the budget document attached as Annex 2 will be revised accordingly.

Sections H through M

Not Applicable.

PART III

21. A. Schedule of Reviews

The project will be subject to periodic reviews by UNDP and the World Bank, in accordance with the UNDP's established policies and procedures.

B. Evaluation

The project will be subject to evaluation in accordance with UNDP's established policies and procedures.

C. Progress and Terminal Reports

The Bank will submit to UNDP semi-annual progress reports and a terminal report upon completion of the project, as well as final reports of all country specific activities funded under the project as they become available.



ANNEX I

The Joint UNDP/World Bank Energy Assessment Programme

Assessments Completed Since Nov. 1980	Assessments in Progress
Bangladesh	Benin
Burundi	Bolivia
Haiti	Ethiopia
Indonesia	Fiji
Kenya	Morocco
Malawi	Nepal
Mauritius	Niger
Papua New Guinea	Nigeria
Rwanda	Peru
Sri Lanka	Senegal
Turkey	Solomons
Zambia	Sudan
Zimbabwe	Togo
	Uganda
	Yemen A.R.

## PROJECT BUDGET COVERING THE UNDP CONTRIBUTION (IN U.S. DOLLARS)

Country : INTERREGIONAL  
 Number :  
 Title : Energy Sector Management Program

				CY83		CY84		CY85	
		SM	TOTAL	SM	TOTAL	SM	TOTAL	SM	TOTAL
10.0	Personnel								
11.1	Energy Expert	24	208,000	6	40,000	12	108,000	6	60,000
11.2	Energy Expert	24	208,000	6	40,000	12	108,000	6	60,000
11.3	Program Management <u>a/</u>	24	208,000	6	40,000	12	108,000	6	60,000
11.4	Consultants	35	360,000	10	102,857	15	154,286	10	102,857
11.99	Sub-total	107	984,000	28	222,857	51	478,286	28	282,857
13.0	Administration								
13.1	Adm. Officer <u>b/</u>		70,000		15,000		35,000		20,000
13.2	Researcher		60,000		15,000		30,000		15,000
13.3	Secretary		39,000		9,000		20,000		10,000
13.4	Secretary		39,000		9,000		20,000		10,000
15.0	Travel		30,000		5,000		15,000		10,000
15.99	Sub-total		238,000		53,000		120,000		65,000
50.0	Miscellany								
52.0	Reports		26,000		8,000		14,000		4,000
53.0	Sundry		2,000		500		1,000		500
50.99	Sub-total		28,000		8,500		15,000		4,500
99	Project Total		1,250,000		284,357		613,286		352,357

a/ This person will liaise with the financial staff of UNDP and potential contributors to the Program. He/She will therefore spend a considerable portion of their time at UNDP headquarters in New York during the first year.

b/ 50% of estimated costs; remainder will be provided under the ESAP.



## OFFICE MEMORANDUM

TO: Mr. Julian Bharier, Chief, EGYEA

March 7, 1983

FROM: Masood Ahmed SUBJECT: MALAWI: Follow Up on Energy Assessment

1. At Peter Hall's suggestion I met with Mr. Bobe (Chief Economist) and other government officials on March 2 to discuss the follow up program for the sector. Mr. H. Wagner, from the Agriculture Division, and Messrs. Hall, Tuncer and King (the team responsible for SAL II preparation) also attended the meeting. As you know, further progress in the energy area is a major component of the proposed SAL II.

2. The two main areas which had been identified by the assessment as requiring follow up work and associated technical assistance were:

- (i) a program to improve the efficiency of fuelwood use in the tobacco industry; and,
- (ii) strengthening the newly formed energy unit in the Economic Planning Division so that it can effectively play the coordination and policy formulation role for which it is responsible.

During our discussion, Mr. Bobe expressed a keen desire to move quickly on both fronts and requested our assistance in further defining and implementing the assessment mission's recommendations.

Fuelwood Efficiency Improvement Program

3. In addition to the experimental work being done by the Tobacco Research Authority (TRA) in Lilongwe, the Government has now received a proposal from a Belgian consulting firm (supported by Belgian bilateral assistance) for a pilot project involving the use of solar panel equipped tobacco barns. This proposal is interesting but the Government rightly wants to compare its prospective economics with the TRA developed alternatives before embarking on the project. The general issue here is that there are a number of technical improvement packages of varying reliability, capital cost, applicability, etc. which could be utilized in an overall program for the tobacco industry. However, these need to be classified and evaluated in a systematic way before a large scale program can begin.

4. I agreed with Mr. Bobe that as a first step in this we would be willing to send out a consultant who would review the alternative packages being developed in Malawi and prepare a compendium of them as well as of other instruments/techniques that could also be applied in Malawi. This study would produce a comprehensive list of potential improvement measures, their associated costs, lead times and expected impact on wood use. The study will require a two-week mission and two weeks report writing and should not cost more than \$10,000. Mr. Wagner has agreed to assist in identifying a suitable consultant and in providing the technical supervision of his work.

Institutional Strengthening

5. The need for strengthening the energy unit in EPD is now accepted by all parts of the Government. We have already put forward our views on the general role and responsibilities of such a unit and the technical assistance necessary to develop it. At the March 2 meeting we agreed that the Government would now prepare a detailed scope of work and responsibility statement for this unit, the staffing needed to accomplish this and the technical assistance that it felt was required. Mr. Bobe has undertaken to do this by May 1983 after which we could send a mission to discuss the details of the Government's proposal and identify how the technical assistance could be provided. The May timing would allow our mission to overlap with the proposal SAL appraisal mission enabling the latter to incorporate these energy sector developments in its reports.

cc: Messrs. Hall, King, Tuncer (EA2);  
Wagner (EAP); Wackman (EGY)

MAhmed:cra



Chron

FORM NO. 75  
(9-78)

THE WORLD BANK

ROUTING SLIP		DATE:
		March 4, 1983
NAME		ROOM NO.
Messrs. Schaefer, Shaukat,		
Schott, Devaux		
APPROPRIATE DISPOSITION	NOTE AND RETURN	
APPROVAL	NOTE AND SEND ON	
CLEARANCE	PER OUR CONVERSATION	
COMMENT	PER YOUR REQUEST	
FOR ACTION	PREPARE REPLY	
INFORMATION	RECOMMENDATION	
INITIAL	SIGNATURE	
NOTE AND FILE	URGENT	
REMARKS:		
Attached is a report prepared by a consultant for the Government of Mauritius.		
FROM: Masood <i>(Signature)</i>	ROOM NO.: D449	EXTENSION: 74544

Peter Meier's Report on Mauritius.

March 3, 1983

Professor S. A. Kassenally  
Minister of Energy and Internal Communications  
Government Centre  
Port Louis  
MAURITIUS

Dear Professor Kassenally,

Re: Consultant Study on Institutional  
Analysis of Energy Policy and  
Projects Division, Ministry of Energy

I am pleased to inform you that I have sent to Mr. Danisman, the Resident Representative of the UNDP, ten copies of the above report prepared by Dr. P. Meier on the basis of his mission to Mauritius in January 1983. I believe that this report makes an important analytical contribution to the process of institutional and manpower strengthening in the energy sector, to which both your Government and the Bank attach a high priority. I hope that you will find this report useful and I look forward to receiving any comments or observations that you or your staff might have on it.

In terms of follow-up action, this study reemphasizes the need to strengthen the staffing of the Energy Policy and Projects Division in your ministry by recruiting an additional energy economist and an energy planner/engineer. I know that you are pursuing this question and I hope that suitable candidates can be identified and put on board in the near future. The presence of a full complement of staff in the unit would also enable the maximum benefit to be derived from the training aspects of the various short term consultancies that have been recommended for the coming year.

The study also makes a series of recommendations on the acquisition of office equipment, including a desk top computer, for the Energy Policy and Projects Division. I would appreciate your views on these recommendations. I would like to say, however, that the discussion of the comparative merits of different brands of computers is a reflection of Dr. Meier's experience as a consultant in this field but it is in no way a reflection of the Bank's endorsement of any particular product.



Finally, I would also appreciate your comments on the terms of reference for the various short term studies recommended by the report, and an indication of how the Government wishes to proceed further in their implementation.

I look forward to hearing from you on the above matters.

With best personal regards,



Masood Ahmed  
Energy Assessments  
Energy Department

*bcc: Mr. Hadjeri*

Chron

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TO:

FOR DANISMAN UNDEVPRO, PORT LOUIS, MAURITIUS.

PLEASED TO INFORM YOU THAT I HAVE AIRMAILED TO YOU TODAY 10 COPIES  
 OF PETER MEIER'S DRAFT REPORT: INSTITUTIONAL ANALYSIS OF ENERGY  
 POLICY AND PROJECTS DIVISION IN MEIC FOR YOUR USE AND FOR  
 SUBMISSION TO GOVERNMENT OF MAURITIUS. WOULD APPRECIATE YOUR  
 COMMENTS AND OBSERVATIONS ON THIS STUDY WHICH IN MY VIEW MAKES AN  
 IMPORTANT AND USEFUL CONTRIBUTION TO ANALYZING THESE ISSUES.  
 BEST REGARDS, MASOOD AHMED, ENERGY ASSESSMENTS DIVISION, ENERGY  
 DEPARTMENT.

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NOT TO BE TRANSMITTED

CLASS OF SERVICE: FR?Telex

TELEX NO.: 4259 UNDP IW

DATE: 3/2/83

SUBJECT:

DRAFTED BY:

Mahmed:cra

AUTHORIZED BY (Name and Signature)

Harold Wackman, Acting Chief

DEPARTMENT:

ENERGY

SECTION BELOW FOR USE OF CABLE SECTION

CHECKED FOR DISPATCH



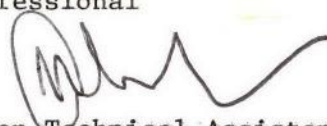
Chris

# OFFICE MEMORANDUM

TO: All EGYEA Professional

DATE: March 1, 1983

FROM: Masood Ahmed



SUBJECT: Draft Report on Technical Assistance Needs Identified for the Energy Sector Management Program

1. Mr. Peter Meier has now prepared his draft report on the above subject which I am attaching for your review and comments. The next step in finalizing this report is for Mr. Meier to meet with the staff members responsible for each country to correct any inaccuracies and to update the information where appropriate. He is tentatively schedule to visit the Bank on March 10. Christine Abunassar will get in touch with you shortly to arrange for a mutually convenient time for a meeting.

In the meantime, I would be grateful for any general comments you may have on this report.


cc: Mr. D.C. Rao

Attachment (including Mr. Meier's Terms-of-Reference)

MAhmed:cra

## OFFICE MEMORANDUM

TO: Mr. Peter Meier (Consultant) December 16, 1982

FROM: Masood Ahmed, EGYEA 

SUBJECT: Study of Technical Assistance Requirements Identified in Energy Assessment Reports

1.

As we discussed, I would like you to prepare an inventory of the technical assistance requirements identified by the various assessment missions. This list should cover both direct technical assistance and specific studies identified in the following areas:

- (i) institutional strengthening for overall energy sector management including training and manpower development aspects;
- (ii) analysis of investment options and preparation of a medium term investment program for the energy sector; and
- (iii) analysis of specific energy policy issues (such as pricing or fiscal arrangements).

However, you should exclude the recommendations for technical assistance in energy conservation and rural/renewable energy, which are being handled separately.

2. In carrying out this work you should first review the 16 assessment reports which are available in draft or complete form, 1/ to prepare a preliminary inventory of the recommended technical assistance activities. You should then discuss this with the various individual staff members who are responsible for these countries to prepare a more detailed and updated listing. You should also discuss the potential technical assistance requirements that have been identified in those countries where assessment reports are still under preparation (Fiji, Solomons, Niger, Nigeria, Sudan, Uganda and Peru). A tentative schedule of meetings with the staff responsible for these countries is attached.

3. On the basis of these discussions, you should prepare, by December 31, 1982, a draft report which describes on a country-by-country basis the outline of potential technical assistance activities in the above areas. You should distinguish between those activities in which

---

1/ Bangladesh, Boliva, Burundi, Haiti, Indonesia, Kenya, Malawi, Mauritius, Morocco, Papua New Guinea, Rwanda, Senegal, Sri Lanka, Turkey, Zambia and Zimbabwe.



other agencies are known to have expressed an interest and those for which "sponsors" still have to be found. You should also prepare a preliminary costing of the various activities recommended in each country, although it is clear that on the basis of available information some of these estimates will be subject to a wide margin of error.

4. In total you should devote up 12 working days to preparing this study, three of which would be spent in Washington for initial briefings and discussion with the assessment staff members. Once your draft report has been reviewed, you should incorporate any comments received thereon and prepare a final report in January 1983.

cc and cleared with Mr. Julian Bharier  
cc: Messrs. D. C. Rao, H. Wackman  
Mrs. Owen

MAhmed:cra

SCHEDULE OF MEETINGS FOR

MR. P. MEIER

Wednesday, Dec. 15, 1982

		(Countries Involved)
10:00	Ms. Ursula Weimper	Haiti, Bolivia
11:00	Mr. Andres Liebenthal	Panama, Gambia & others
12:00	Mr. Gunter Schramm	Nigeria, Bangladesh
1:00	(lunch)	
2:00	Mr. Amaruquaye Armar	various countries
3:00	Mr. Gabriel Sanchez-Sierra	Peru
4:00	Mr. Jochen Schmedtje	Niger

Thursday, Dec. 16, 1982

9:00	Mr. Zia Mian	Zambia, Zimbabwe, Fiji, Solomons
10:00	Mr. David Hugart	Burundi, Rwanda, Morocco
11:00	Mr. Huda Kraske	Papua New Guinea, Nepal
12:00	Mr. Masood Ahmed	Malawi, Mauritius
1:00	(lunch)	
2:00	Mr. Julian Bharier	Indonesia, Uganda
3:00	Mr. Robin Bates	Sudan
4:00	Mr. Harold Wackman	Turkey, Kenya



Chron

February 28, 1983

D.C./Helena:

Re: EPP Estimates of Petroleum Industry in LDCs

1. During this round of revisions we need to firm up the private investment estimates we are using in Chapter V. The current draft uses Chase Manhattan figures which imply investment of \$16 bn/year in all LDC's including CSOE's for exploration and development. Tom Fitzgerald's memo on the Arthur Anderson study makes an estimate of \$1.1 bn/year in LDC's for exploration only, split roughly evenly between OIDC's and OXDC's. Tom reckons exploration investments would be about a third of the total which would bring exploration and development investments to \$3-4 bn/year.

2. The discrepancy between \$3-4 bn and \$16 bn between Chase and Arthur Anderson estimates could be due to:

- (i) different definitions of LDC's;
- (ii) inclusion of non-US companies in Chase study;
- (iii) a lower ratio than 1/3 of exploration in total investment;
- (iv) different time frame; Arthur Anderson is 79-81 historical, Chase is projected for 1980's;
- (v) one or the other could just be inaccurate.

3. However, the difference is large enough and significant in our total financing picture to make it useful to try and reconcile these numbers before we go to print with either of them. Could we discuss how this can be best done?

Masood



Chun.

MAhmed:cra  
Energy Policy Paper  
2/16/83

## CHAPTER VI

### The Role of the World Bank

#### The Developing Countries Energy Problem

6.1 The preceding analysis of energy issues has demonstrated that the process of adjustment to higher commercial energy costs is far from over in the developing countries. Despite the major shifts in pricing structures, investment programs and economic policies that have already taken place in many of these countries, much more remains to be done to ensure that energy is used efficiently and that the formulation of future development strategies incorporates the full effects of higher energy costs. Completion of the adjustment process will also require a major increase in the allocation of investable funds into the energy sector, both for energy production projects and for retrofitting programs to conserve energy. Generating additional resources of these magnitudes would be a challenging task under any circumstances, but it will be particularly difficult in the present international economic climate when growth prospects and overall resource availability are both likely to be constrained for the majority of developing countries. There is a real possibility that in some of these countries, particularly in the lower income ones which have limited access to commercial sources of finance, the pace of adjustment to higher energy costs may be retarded because of a shortage of investment resources. The resource constraint is likely to



be less binding in the middle income developing countries, particularly those which are largely self-sufficient in energy or net exporters of it, but here, too, it is clear that the successful mobilization of additional resources and the effective implementation of a vastly expanded energy investment program will pose a major policy and management challenge.

6.2 To overcome this challenge, energy policymakers in all developing countries will need to place far greater emphasis on three areas:

- (i) pre-investment work aimed at analyzing and defining viable energy development options and formulating costed and prioritized medium term investment programs; this would include not only new energy production projects but also projects to "generate" additional energy by rehabilitating existing energy producing or consuming equipment;
- (ii) preparing a financing plan to meet the investment requirements of the sector and embarking on a major effort to mobilize these resources from both domestic sources and from potential international financing agencies; this would encompass the setting of energy prices at levels which would generate an adequate share of investment resources within the sector and, it would also include a determination of the appropriate roles of public and private agencies in financing energy development; and,
- (iii) strengthening the institutional and management capability in the energy sector both at the national level and at the enterprise level so as to carry out the above tasks and to implement effectively a larger, more diversified and more complex investment program.

These tasks have always been a part of efficient sector management but they are much more important now because of the quantum increase in resources that need to be devoted to energy development and because of the increasing complexity of energy sector planning referred to in the preceding chapters.

6.3 This reordering of emphasis will also need to be reflected in the energy assistance programs of international agencies and particularly of multilateral agencies such as the Bank which have an important contribution to make in all these areas. Thus, while the remainder of this chapter deals with the current and proposed role of the Bank in the energy sector of developing countries, many of the conclusions are equally applicable to other international agencies which share the objective of supporting efficient and cost effective energy development in these countries.

#### The World Bank Energy Program

6.4 The principal objective of the World Bank's energy program is to assist developing countries in defining and implementing an appropriate energy sector development and management strategy. This assistance is rendered in a variety of ways ranging from financial support for energy development projects, to technical assistance in evaluating national energy options and priorities, to management assistance in strengthening energy sector institutions and the national energy planning capability. Although these activities are often carried out as discrete tasks, the unique feature of the Bank's involvement in this sector is that all these elements are part of an integrated strategy and a long term commitment to improving the energy prospects of these countries. Thus, in each



country the determination of the specific components of the Bank's energy program is made on the basis of an analysis of the energy sector priorities for that country, taking into account its broader development context. The specifics of Bank involvement therefore vary from country to country but one feature which is common to the Bank's work in all countries and at all stages of the energy development process is an essentially pragmatic and problem solving approach combined with an objective technical evaluation of the comparative benefits of alternative energy development strategies. This approach enables the Bank to simultaneously pursue both short term objectives (such as financial support for a specific energy development project) and longer term goals (such as the strengthening of major energy sector institutions or the modulation and articulation of a long term national energy development strategy).

6.5 An important result of this multi-pronged involvement is a mutually reinforcing interaction between project and policy levels to ensure that specific energy projects conform to the country's overall sector development priorities and that these priorities are themselves flexible enough to respond to lessons learned through the preparation and implementation of major investment projects. As discussed in paragraphs 6. below, the contribution that the Bank makes through the financing of specific energy projects to the analysis or resolution of overall sector issues is often as important as the direct benefits associated with the project itself. These non-project benefits maybe less visable because they are often realized in small steps or accrue well after the project itself has been successfully completed; thus their overall impact

is sometimes underestimated unless one examines the cumulative effect of Bank intervention in a particular energy subsector over an adequately long period.

6.6 This approach enables the Bank to respond quickly and flexibly to the changing energy needs and circumstances of individual member countries--flexibility which is reflected in the recent evolution of the Bank's activities in the energy sector. Up to the mid-1970's the principal focus of the Bank's energy program was the financing of electric power development and policy/technical advice to developing countries in planning and operating their rapidly expanding electricity systems. The Bank had also assisted in the development of some petroleum related infrastructure (oil pipeline in Yugoslavia, gas transmission and distribution in Pakistan) and financed coal development in India (check) but these activities were small in relation to the electric power sector where Bank supported projects accounted for a significant share of the total investment by developing countries. The doubling of oil prices in 1973 and again in 1979/80 radically changed this situation by increasing, on the one hand, the urgency of tackling the problem of unsustainable energy import bills for the vast majority of OIIDC's and by vastly expanding, on the other hand, the range of economically viable indigenous energy development options. This combination led to a significant increase in Bank's lending for energy and a diversification into supporting the development of petroleum, coal and other primary energy resources in developing countries. This process, which was approved by the Bank's board on successive occasions (See Box ), also led to a growing emphasis on the better management of energy demand and on



providing technical assistance to developing countries in the evaluation of major energy issues and options. The Bank also stepped up its efforts to function as a catalyst in mobilizing additional funds for energy development in the LDC's from potential private and public capital sources.

Table VI.I - World Bank Energy Lending <sup>1/</sup>  
(numbers of projects and amounts in US\$, million;  
fiscal year (FY) starting July 1)

	FY 1979		FY 1980		FY 1981		FY 1982		FY 1983 (est.)	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
Electric Power	19	1,355	24	2,392	17	1,323	21	2,131		
Oil and Gas	4	112	13	385	12	650	14	539		
Coal	-	-	1	72	1	10	3	227		
Other <sup>1/</sup>	-	-	-	-	1	250	6	460		
TOTAL	23	1,467	38	2,849	31	2,233	44	3,358		

<sup>1/</sup> Excludes fuelwood and other energy investments financed as components of projects in industry and agriculture sectors.

<sup>2/</sup> Includes refinery, alcohol and energy projects.

In terms of financial support, the volume of Bank lending for energy has more than doubled since FY 1979 to an estimated \$ billion in FY83. More than half of this lending continues to be for power projects, reflecting their dominant share of energy investment programs in most developing countries. The Bank supports all stages of power development but the process of changing the primary energy supply mix for electric power generation now underway in the developing countries has been reflected in a growing emphasis on generation projects in recent years (check if this is true).

6.7 The most rapid growth in the Bank's program in recent years has been in the oil and gas sector where (49)\* projects and \$(1.7)\* billion of Bank lending have been approved since the inception of the program in 1977. In this subsector, the Bank supports a wide variety of activities including:

- compiling, collating, processing, and where necessary securing through seismic surveys, geological and geophysical data with the view to promoting exploration by the international petroleum industry;
- exploration and appraisal drilling by national oil companies, alone or in joint ventures with foreign oil companies;
- oilfield development both offshore and onshore;
- enhanced recovery of oil and natural gas;
- rationalization of the refinery program, including secondary refining, in order to upgrade the value of output and secure a better match between product yield and consumption pattern.

These activities are described in greater detail in boxes 3.1 and 3.4.

6.8 In coal, the volume of lending has so far been small (\$309 million) reflecting the long lead times associated with the preparation of coal projects in the developing countries, but about projects are currently under preparation in countries. In fuelwood, despite the well recognized need to expand investment programs, the growth in Bank

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\* These numbers need to be modified to include refineries.



lending has been slow for the reasons outlined in paragraphs 3 above. Finally, although the volume of lending for energy efficiency improvement programs and projects for renewable energy development has also been small, important contributions have been made in both these areas as described in Boxes 3 above.

6.9 The rapid and substantial buildup of energy lending in recent years has made the Bank the single most important official source of external capital for energy development in the LDC's. In particular in the poorer developing countries which have limited access to commercial financing sources, the \$0.7 billion of highly concessional IDA financing provided since 197 has made a major contribution to underwriting the process of structural change in the energy sector which will lead to an alleviation of their present crippling dependence on expensive imported oil. Over the 1975-80 period, the World Bank provided almost a third (check) of the total publically guaranteed borrowing for energy development in the low income developing countries, much of it on IDA terms. Despite this contribution, however, it is fair to say that in relation to the total investment requirements for energy development in the LDC's, the financial support of the Bank accounts for only a small fraction of the total resource requirements and it is unlikely that this position will change significantly in the future. It is important, therefore, to spell out what other benefits accrue from the Bank's intervention in energy development in these countries. These benefits can be classified into three groups. First, the contribution made at the project level in terms of competent project selection, formulation and implementation. Second, the contribution made in strengthening

indigenous institutions and developing an effective national energy planning and management capability. And third, the assistance provided in analyzing and resolving key sector issues and in formulating an appropriate overall sector development strategy. These points are dealt with in the following sections.

#### Project Selection, Design and Implementation

6.10 A traditional objective of Bank financing is to ensure that the project is well designed, incorporates proper technology, is implemented competently and puts into position an agency capable of not only implementing it but subsequently running and operating it. This object acquires an even greater importance in the energy sector where technology is evolving rapidly, there is an absence of strong institutions in many countries, and where the cost of delay or wrong choice is high. The Bank's approach to project financing has therefore been qualitatively different from other financing institutions. Its first concern is to ascertain that the proposed project conforms to overall national sector priorities. To ensure this, the preparation of each project is preceded by a review of sector objectives, priorities and investment options, often in the context of an energy sector assessment or of subsector studies. Sometimes this work leads to the selection of a project which had previously not been considered by the host country or had been rejected due to incomplete analysis. It can also identify priority investment opportunities which have not been taken up by other financing sources (such as commercial banks or multinational energy companies) because the investment while attractive from the country's point of view, ranks low according to the global criteria used by these agencies.



Perhaps the best known examples of this are found in the oil and gas sector where, as discussed earlier in paragraphs 3 , the development of small oil fields or of natural gas deposits to supply domestic markets may be delayed because of the limited interest in these resources by international companies. However, this phenomenon is by no means unique to the petroleum subsector. In many lower income developing countries a whole range of viable energy investment opportunities may not be taken up by international equity financiers or by commercial banks because poor country crediworthiness considerations override the attractive economics of individual projects. It is unlikely for example that without Bank involvement, the gas development potential of Tanzania or Bangladesh would have been exploited to date.

6.11 After a particular Bank project has been identified, considerable effort is expended to ensure that its design represents the least cost solution. The scope of the project is discussed in detail between the Bank and the borrower, attempting to optimize the use of available resources, taking into account technical and economic considerations. This close involvement continues well after the project has been approved by the Bank's board. Bank staff are closely involved in setting the arrangements for procuring equipment and services. Through a process of international competitive bidding, procurement is ensured at minimum cost consistent with required quality and specifications appropriate to the needs of the project rather than those promoted by suppliers. Regular supervision of the project sites until it is fully implemented enables the Bank to help resolve technical problems, insist on continued budgetary support for agreed financing of local

currency expenditures and ensure that institutional arrangements are modified if necessary for the timely and cost effective completion of the project. Bank staff also assist the borrower in preparing terms of reference for consultants used in project preparation or implementation, in reviewing their qualifications and evaluating their work. At all stages the Bank seeks to ensure that the borrower's interests are safeguarded while at the same time, bringing to bear on each decision an objective perspective and the experience gained by the Bank in dealing with similar problems in other countries.

6.12 A key contribution by the Bank in the project context is the transfer of technology to the borrower. Special efforts are made to incorporate appropriate technology in the project design in an endeavor not only to enhance project benefits but in the hope that the entire sector may benefit there from. Transferring technology is an underlying objective of a large number of Bank financed energy projects. For example, the Bank financed hydrocarbon projects in China would strengthen the energy base by increasing oil production; more importantly these projects would upgrade the level of technology over a wide range of oil field activities, such as acquisition and processing of geophysical data, drilling and production methods, reservoir engineering and techniques relating to enhanced oil recovery. The objectives and modes of technology transfer in Bank energy projects are discussed briefly in Box 4.1.

#### Institutional Strengthening

6.13 An equally important objective of Bank involvement is to strengthen the indigenous energy sector management capability in the



country. At the project level, this means designing implementation arrangements which will leave behind a corpus of managers to subsequently maintain, operate and expand the facilities provided under the project. Sometimes this approach results in slower implementation of the particular project than could have been attained if the responsibility for project execution had been handed over in its entirety to expatriate engineering contractors. While the latter approach would generally be preferred by commercial financing agencies whose primary involvement is at the project level, the Bank often consciously chooses to give up short term gains in project implementation schedules in favor of securing the long term benefits associated with stronger indigenous institutions. To complement this, many projects include the provision of technical assistance to address institutional weaknesses. Studies have also been financed and systems put into place under Bank projects for management information, budgetary control and accounting and financial management of the main energy agencies.

6.14 More recently, there has also been an increased emphasis in the Bank's efforts to provide assistance for strengthening the management and planning capability at the sectoral and national levels. The need to evaluate increasing diverse and complex energy options, to develop sector investment programs and to solicit large volumes of investment finance from a variety of sources, and to enter into an effective technical and policy dialogue with potential private investors all require a much stronger national energy sector management capability than currently exists in the vast majority of developing countries. Through its Energy Sector Management Program and through its ongoing informal dialogue with

energy policymakers the Bank makes an important contribution in providing technical assistance and advice to strengthen the overall institutional framework for the sector. In particular, the Energy Sector Management Program (described in box \_\_\_\_ ) provides a good example of a flexible and quick response to an emerging need that has been indentified through both project and sector work in these countries. Although the program has only just got underway, about a dozen developing countries have already requested assistance to analyze institutional issues and strengthen their sector management capability. This type of assistance is also being increasingly provided under the aegis of regular Bank investment projects. Nearby all the petroleum exploration promotion projects financed by the Bank for example, provide assistance at the sectoral level, in setting up an indigenou s capability to legislate and monitor the exploration and development activities in the country.

6.15 The key feature of this institution building effort--as well as the principal reason for it success--is that in this as in its other work, the Bank's approach is based on a combination of a long term comittment to improving the energy prospects of developing countries and an objective but pragmatic and problem solving approach to tackling the institutional deficiencies that are a cause of concern to both the host country and the Bank. Thus, the Bank does not recommend any general or standard solutions to organizing the energy sector. Rather, the operational and policy experience of the Bank has demonstrated that a wide variety of institutional arrangements and mechanisms can be made to work in different country circumstances and that the specific framework appropriate in any particular country can best be developed by examining its own specific needs and evolution.



### Sectoral Perspective

6.16 The analysis of macroeconomic and sectoral priorities is an intrinsic part of the Bank's work in the energy sector. However, the object of this analysis goes far beyond the identification of appropriate energy investment projects for Bank financing. Rather, this analysis and the ensuing dialogue with national policymakers covers a wide range of sectoral issues such as demand management and pricing, interfuel substitution, investment planning, resource mobilization and the respective roles of public and private agencies in energy sector development. There is not always complete agreement on these issues between the technical staff of the Bank and of national governments. Nevertheless, the contribution of the Bank is in providing an objective technical analysis of these issues and attempting to develop an agreed program for their resolution.

6.17 The Bank uses a variety of instruments for carrying out this work. Regular economic reports and sector studies are one vehicle for analyzing and discussing important energy issues with member governments. The Energy Assessment Reports that the Bank is preparing in conjunction with the UNDP have been widely used by governments and international agencies alike and many of their policy recommendations have been implemented after their completion (see Box for a description of this program). Perhaps one of the major contributions of these reports has been to help define "energy" as a "sector" in developing countries and to highlight the interaction between policies and programs in the various energy supply subsectors (e.g. fuelwood,

coal, petroleum and electricity). This has also served to identify the issues of coordination between these subsectors which had previously been neglected because the links among them had not been perceived as clearly.

6.18 Another important vehicle for addressing broad sectoral issues is through the involvement in successive investment projects. At project appraisal and negotiation, agreements are often sought with the government and/or the concerned energy enterprises on issues of broad sectoral relevance as well as those affecting the project more directly. The pricing of petroleum, power and coal is frequently discussed in detail and pricing objectives are set on the basis of an analysis of economic and financial implications of alternative price structures. In recent years, tariff studies have been undertaken by power utilities in member countries, most of them at the instigation of the Bank. In the petroleum sector, out of projects approved in the period to , projects included specific agreements on the modification of the level and structure of petroleum prices, taking into account the impact on fuel substitution policies. Specific remedial measures to improve the financial performance of the major energy supply agencies are also generally discussed and agreed with the borrower in the context of project negotiations.

6.19 A good example of the contribution that can be made to resolving sectoral issues through the vehicle of project financing is provided by the history of the Bank's involvement in the petroleum sector in Egypt. In 197 , the Government of Egypt requested the Bank to participate in the financing of a project for the recovery of associated gas which was flared in the Gulf of Suez. The project was relatively straightforward



and its economics were attractive. However, in the course of the evaluation of the project, the Bank identified:

- (i) a much larger potential for utilization of associated and non-associated gas than evaluated by the Government;
- (ii) areas which were gas prone and whose exploration had been neglected by private oil companies, partly because of the lack of development of the local gas market (and the large infrastructure investment and long lead-time to develop such a market), as well as inadequate gas pricing provisions, and partly due to the oil companies giving higher priority to finding exportable oil;
- (iii) the need to step up oil exploration as well as substitution of gas for oil consumed domestically to slow down the decline in oil exports; and
- (iv) the need to rationalize pricing policies.

As a result of this analysis a process was initiated and carried out during the implementation of this project, whereby studies were commissioned to define what further action the Government should take in the sector. The main result is that years after the project was initiated, the Government has at its disposal all the necessary elements to define a long-term gas development strategy and to implement it. Positive measures have already been taken to revive exploration in gas prone areas and correct some of the pricing problems. Considerable progress remains to be made, particularly in the field of energy pricing, but the foundation for a long-term development strategy has been laid

which should significantly improve the contribution to the petroleum sector to the overall economic development of Egypt.

6.20 Finally, in addition to sector reports and project work the Bank influences energy policy in its member countries through the dialogue associated with Structural Adjustment Lending. Many of the SAL's approved by the Bank's Board since have had a major focus on the restructuring of policies and programs in the energy sector. This emphasis is expected to continue, because for many developing countries, changes in this sector will effectively determine the success of their overall structural adjustment efforts.

6.21 This multi-dimensional involvement of the Bank in the energy sector of developing countries enables it to use a flexible array of instruments to assist member countries in developing an appropriate energy sector management strategy. However, the success of its efforts depends on two important factors. First, the policy advice that the Bank offers is accompanied by a financial commitment to underwrite a part of the investments required to overcome a difficult period of transition in the sector. This financial support provides both a degree of leverage and allows for a much greater degree of day to day involvement in assisting the line agencies in identifying and resolving problems as they arise. Indeed, experience has shown that policy advice divorced from operational involvement is seldom as effective or as relevant as it needs to be. Governments recognize this fact and demonstrate it in their receptivity to such advice. The financial involvement of the Bank also serves to underpin the credibility of its advice, which is the second major factor underlying the success of its efforts. However, the high



degree of credibility which the Bank enjoys in developing countries is not derived from its financial support alone. Rather, it has to be earned over time in each sector by virtue of the quality of its work and the problem solving nature of its approach. In particular, when offering specific advice of a technical nature to energy supply agencies in these countries, the Bank's staff often have to persuade line managers that their agencies have weaknesses which need outside assistance to be rectified. This too requires a high degree of professional competence to ensure that the Bank's advice is perceived as credible.

#### Cofinancing

6.22 The emphasis placed by the Bank on the cofinancing of its energy projects stems from three factors. First, from a recognition of the fact that the substantial investment requirements for energy development in the LDC's require a major effort in mobilizing funds from all potential sources. Second, because projects in the energy sector are more likely to attract cofinancing than in many other sectors because of the wide interest in energy development by both private and official financing agencies. And third, because projects supported by the Bank offer attractive opportunities for cofinancing because of a variety of reasons: the project will have been thoroughly appraised from the technical, financial, economic and institutional viewpoints; the execution of the project will be supervised in detail by qualified Bank staff; the financial participation of the Bank may impart greater stability to the relationship between the borrower and other financing agencies; and it is possible for the Bank to take the later maturities in a joint syndication, thereby allowing commercial lenders to acquire

relatively early repayment of their loans. Given these factors, the Bank has actively sought to mobilize cofinancing funds for its energy projects in collaboration with the borrowing country concerned. These efforts have met with some success. During the FY 1979-82 period, the \$ billion of Bank lending for energy was associated with \$ billion of cofinancing from bilateral and other multilateral agencies, export and suppliers credits, as well as commercial banks and private sources. As shown in Table 6.2 below, the "average" Bank energy project over this period had a total cost of US\$ 322.6 million with a foreign exchange component of 48%. The Bank financed an average of 22% of the total cost (46% of foreign exchange cost) while external cofinancing covered 25% of the total cost (51% of foreign exchange cost) respectively. On average, therefore, the government and/or the local sponsor financed the entire local currency cost plus about 3% of the foreign exchange cost of these projects. However, there are marked differences in financing patterns between pre-development/engineering type projects and development type projects as well as among projects in the various energy subsectors (i.e. petroleum, power, coal, etc.). Pre-development and engineering projects (average cost US\$ 16 million) have a higher proportion of foreign exchange cost (72% average). Because of their higher risks, small loan amounts and the need for speedy implementation these projects are not very attractive to many financing agencies and the Bank has had to finance a larger share of the total cost of these projects.



Table VI.2 - Financing of World Bank Energy Projects  
(FY 1980 - FY 1982)

<u>Sector</u> <u>1/</u>	Share in Total Project Cost (%)		Share in Foreign Exchange Cost (%)	
	Bank/IDA	Other External	Bank/IDA	Other External
Oil and Gas (43)	30	45	38	57
Pre-development (28)	66	8	88	11
Development (15) <u>2/</u>	27	48	34	61
<u>Power</u> (83)	23	24	53	54
<u>Coal</u> (5)	<u>20</u>	<u>25</u>	<u>32</u>	<u>42</u>
<u>All Energy Projects</u> <u>3/</u> (138)	22	25	46	51

1/ Numbers of projects in brackets.

2/ Excluding the Ivory Coast project, the figures in this row are 37, 27, 47, 36 respectively.

3/ Includes 'other' energy projects

Source: World Bank [D. Carpio]

6.23 In terms of sectoral patterns, the highest degree of cofinancing has been associated with the oil and gas program where every \$1 of Bank financing was matched by \$1.49 from other cofinanciers. In this sector, the Bank has been successful in mobilizing all form of cofinancing for gas development, but so far, bilateral/multilateral sources have not contributed as much to oil development projects as in the gas and power area. The cofinancing ratios for the other energy subsectors were 1.28:1 for coal projects, 1.03:1 for power projects and 0.96:1 for other energy projects (refineries, biomass, etc.).

6.24 The extent of cofinancing is an important feature of Bank projects but two important caveats deserve mention. First, it should be pointed out that in some cases these co-financing ratios lose their meaning because the project is best seen as part of an ongoing program of investment to achieve certain objectives. In such situations, the Bank may select a subset of the investments which is important and in which it has a special contribution to offer. Bank finance may represent a relatively high share of the "project's" costs while remaining a relatively small share of the costs of the whole investment program (see Box 6.1 [on Bombay High II or other example]). Moreover, even if a project is highly successful in attracting co-finance, there is a minimum participation by the Bank that is necessary to ensure that the Bank's judgement is accorded due weight in decisions affecting the project and, further, that the Bank is able to seek agreements with the Government and concerned enterprises on sensitive matters affecting sector policy and institutional arrangements. In some cases, it may be necessary to apply this criterion not only to the Bank's share of the whole project but to its share in specific components of the projects that will enable the Bank to be closely involved in the project until its completion, although these components may be particularly attractive to other credit agencies that lack the technical expertise to supervise project execution (e.g. Peru II). In such cases, the Bank may be required to finance a higher proportion of project cost in order to assure satisfactory project completion.

6.25 The second caveat is that while individual projects may offer useful vehicles for mobilizing cofinancing, the decision on the



appropriate pattern of energy development from various capital sources is one that must be taken at the country level. In some countries, the overall foreign financing pattern and debt service ratios may be such that extensive commercial financing for a particular energy project may not be desirable from a national viewpoint even though it is feasible from the project or project executing agency's standpoint. Thus, in some cases the size of the Bank's participation in financing an energy development project will be determined as much on country creditworthiness and macro-financing grounds as on project financing criteria alone. Nevertheless, the Bank appreciates the "marketability" of energy development projects in the financial community and to the extent feasible with overall developmental goals, it will continue to make a major effort at promoting cofinancing opportunities in this sector.

#### Catalytic Role

6.26 The mobilization of additional funds through cofinancing is perhaps the most obvious manifestation of the catalytic role played by the Bank in the energy sector. However, as the earlier sections in this chapter have attempted to demonstrate the Bank's objective is to function as a catalyst in the much broader sense of accelerating the pace of adjustment to higher energy costs in the developing countries.

6.27 One dimension of this work which is particularly relevant in the petroleum subsector is the role of the Bank in promoting private equity investments in developing countries. A variety of instruments are used to pursue this objective. The most important one is the exploration promotion projects financed by the Bank which have the specific objective of rebuilding private company interest in petroleum exploration and

development in these countries. Secondly, exploration drilling and reserve audits financed by the Bank may have beneficial side effects. In Bolivia, for example, . Third, infrastructure investments financed by the Bank help firm up private involvement in exploration and appraisal. In Thailand, the Bank supported gas pipeline has rebuilt private exploration interest in gas deposits adjacent to the pipeline. The Bank's role in resolving oil and gas producer pricing issues also has a direct impact on the pace of private exploration activity. Finally, the Bank may issue "letters of cooperation" and other arrangements to reduce the perception of political risk, when asked to do so by the host government and private investor concerned.

Future Priorities

to follow.



Chron

February 23, 1983

Mr. M. S. Husain  
Program Officer  
UNDP

Dear Mr. Husain,

Thank you for your letter of January 13, 1983 and the attached forms for the TOKTEN program. As I had indicated to you in my telex of August 11, 1982 and a subsequent letter in November, I would like to find out more about the specific nature of the assignment that is being proposed so as to determine whether I can make a meaningful contribution and whether the duration and timing would fit in with my other responsibilities here.

I look forward to receiving this information where upon we can proceed further in the matter.

Yours sincerely,



Masood Ahmed  
Energy Assessments Division  
Energy Department

UNITED  
DEVELOPMENT



NATIONS  
PROGRAMME

ADDRESS : UNITED NATIONS OFFICES, 18, 6th AVE. RAMNA 5, ISLAMABAD, PAKISTAN - P. O. BOX 1051 - TELE : 28461  
TRANSFER OF KNOW-HOW THROUGH EXPATRIATE NATIONALS

Ref: PER 262/6-A/3

13 January 1983

Dear Mr. Ahmad,

PAK/78/026 - Transfer of Know-How Through  
Expatriate Nationals (TOKTEN)  
- Mr. Masud Ahmad, USA

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We wish to draw your attention to our letters dated 31 October and 1 December 1982 which remain unanswered.

If you are interested in the TOKTEN programme, kindly fill in the enclosed form and return to us alongwith copies of the papers written by you, for submission to the Government.

Yours sincerely,

*M. S. Husain*  
M.S. Husain  
Programme Officer

Mr. Masud Ahmad  
IBRD  
1818 H Street, N.W.  
Washington, D.C. 20433  
U.S.A.

cc: Mr. Karimullah, Research Officer, Economic Affairs Division  
Islamabad.





# UNITED NATIONS DEVELOPMENT PROGRAMME IN PAKISTAN

## TRANSFER OF KNOW-HOW THROUGH EXPATRIATE NATIONALS

PERSONAL HISTORY STATEMENT										
1. FAMILY NAME		FIRST NAME		MIDDLE NAME		2. SEX				
3. DATE OF BIRTH		4. PLACE OF BIRTH		5. NATIONALITY AT BIRTH :						
				6. PRESENT NATIONALITY :						
7. PLEASE STATE WHETHER YOU ARE A PERMANENT RESIDENT OF ANY COUNTRY OTHER THAN THAT OF YOUR NATIONALITY AND IF SO, WHICH ONE?										
8. PRESENT ADDRESS			9. PERMANENT ADDRESS			10. PRESENT TELEPHONE NO.				
						Office : Home :				
11. YOUR BASIC SPECIALIZATION :										
12. LAST ADDRESS IN PAKISTAN :										
13. LAST POST HELD IN PAKISTAN POST TITLE DEPT/AGENCY EMPLOYER (NAME AND ADDRESS)										
14. PREFERRED PERIOD OF ASSIGNMENT (Two weeks minimum excluding travel time)										
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15. LANGUAGES  (List Mother Tongue)		READ			WRITE			SPEAK		
		Ex- cellent	Good	Slight	Ex- cellent	Good	Slight	Ex- cellent	Good	Slight
List only special skills or Interests :										
16. UNIVERSITY EDUCATION : Give details, using the following space in so far as it is appropriate										
Name and Place		Years Attended		Degrees and academic distinctions			Main Subjects			
		From	To							

17. List professional societies and activities in civic, public or international affairs

18. List significant publications you have written (do not attach)

19. PRESENT EMPLOYMENT Exact title of your post :

Dates	Net salary/year	Duty Station
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From	To (Present)		Name and Address of Employer :
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Name of Supervisor	Type of Business :
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Description of your work :

20. Have you any objections to our making enquiries of your present employer ?

Yes                       No

21. REFERENCES : List three persons (at least one from Pakistan) not related to you who are familiar with your character and qualifications.

Full name	Full Address (Telephone No.)	Business or Occupation

22. State any other relevant facts, Mention problems / Institutions in Pakistan where you feel your expertise could be of assistance.

I certify that the statements made by me in answer to the foregoing questions are true, complete and correct to the best of my knowledge and belief.

Date : \_\_\_\_\_ Signature : \_\_\_\_\_





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Description of your work :			
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I certify that the statements made by me in answer to the foregoing questions are true, complete and correct to the best of my knowledge and belief.

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Date : \_\_\_\_\_ Signature : \_\_\_\_\_





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TRANSFER OF KNOW-HOW THROUGH EXPATRIATE NATIONALS

TRANSFER OF KNOW-HOW THROUGH EXPATRIATE NATIONALS

Background:

There is in Pakistan, as in many developing countries, an increasing awareness of the need to acquire and apply technology to social and economic problems at an intensified rate. While the requirements (and the costs) of technology acquisition are mounting, the multi-lateral and bi-lateral assistance sources to supplement local efforts are dwindling. The need for dynamism and innovation in devising new forms of cooperation is greater now than ever before.

In this connection, there exists for Pakistan, as again for many other countries, a growing but largely untapped potential source for know-how which could be a considerable asset if mobilized; namely, the body of technologists and managers of Pakistani origin who have settled abroad.

This project aims at a modest, but potentially significant, re-transfer of this technology to Pakistan. Preliminary inquiries confirm that many such talented individuals would welcome the opportunity of bringing, under UN aegis, some of their experience back to Pakistan on short assignments.

Objectives:

The main objectives are:

1. To bring specific technical inputs for the development of Pakistan over a range of sectors in accordance with priorities in the country's Fifth Five Year Development Plan.
2. To create a system whereby outstanding specialists of Pakistani origin working abroad are enabled to make effective contributions in key sectors. Specifically, the project aims to obtain the services of such experts for short assignments of two weeks up to a maximum of two months in their country of origin.

.../

The scheme covers Pakistani-origin persons working abroad in responsible positions, irrespective of whether they have retained their Pakistani nationality or adopted a new one. It includes scientists, technologists and engineers as well as managers, administrators and other skills needed for economic and technological development. These are persons of international standing, identified mainly by their peers in Pakistan. They are being included in a roster of experts abroad being developed by the Working Committee in Islamabad, based in part on contacts with universities, management institutions, chambers abroad, and UN agencies and on overseas visits by selected members of the Working Committee.

Output:

The visiting experts provide to their host agency training seminars and consultations as well as proposals on policy issues, institutional arrangements, and other aspects as required. Apart from reports, significant transfer of experience takes place by the day-to-day association and discussion with local staff. Further, the experts are expected to initiate prompt implementation of ideas during their stay in Pakistan.

Inputs:

UNDP meets travel costs - both external and internal - and per diem in Pakistan. The host organization provides an honorarium in accordance with its regulations.

A Working Committee consisting of representatives from the Economic Affairs Division and UNDP is guiding the preparatory work. Discussions with concerned Government departments are being undertaken for sectoral projects. Host organizations in Pakistan will provide office facilities, secretarial services and local counterparts on the administrative side and qualified counterparts and essential background information on the technical side.

Action Underway:

The roster of experts of Pakistani origin abroad is being prepared through wide publicity to this scheme. Specific assignments in Pakistan are being identified in order that specialists could be matched with the organizations where their skills are required.

For further particulars, if needed, please contact:

United Nations Development Programme  
Attention : Mr. Miguel Bermeo  
Assistant Resident Representative  
P.O.Box 1051  
Islamabad, PAKISTAN



UNITED  
DEVELOPMENT



NATIONS  
PROGRAMME

ADDRESS : UNITED NATIONS OFFICES, 18, 6th AVE. RAMNA 5, ISLAMABAD, PAKISTAN · P. O. BOX 1051 · TELE : 28461  
TRANSFER OF KNOW-HOW THROUGH EXPATRIATE NATIONALS

Ref: PER 262/6-A/3

1 December 1982

Dear Mr. Ahmad,

PAK/78/026 - Transfer of Know-How Through  
Expatriate Nationals (TOKTEN)  
- Mr. Masud Ahmad, USA

---

We should appreciate it if you could kindly send us the information requested in our letter of 31 October, for submission to the Government.

Yours sincerely,

*M. S. Husain*  
M.S. Husain  
Programme Officer

Mr. Masud Ahmad  
IBRD  
1818 H Street, N.W.  
Washington, D.C. 20433  
U.S.A.

cc: Mr. Rashid Mahmood Ansari, Deputy Secretary (Admn)  
Planning and Development Division, Islamabad

: Mr. Karimullah, Research Officer, Economic Affairs Divn.  
Islamabad.

## OFFICE MEMORANDUM

TO: Messrs. Yves Rovani, Director  
D. C. Rao, Assistant Director, EGY

February 22, 1983

FROM: Julian Bharier, Chief, EGYEA *JB*

SUBJECT: Operational Aspects of Energy Assessments

1. The external contribution of the Energy Assessments has now been firmly established, with both the host governments and other donor agencies stating in a variety of fora that these have helped to provide a framework for policy, investment and external assistance decisions in the energy sector. However, now that we have a baker's dozen of completed assessment reports it is also useful to evaluate what operational impact they have had within the Bank in terms of identifying new projects, restructuring provisionally planned projects, contributing to SAL's, or more generally, strengthening the energy dialogue between the Bank and the country concerned. As the attached note demonstrates, this contribution has indeed been substantial in the case of almost all of the countries where assessment reports have been completed. Moreover, this list does not include two of the more recent assessment missions, Nigeria and Peru, whose contribution to firming up the petroleum lending program is already quite clear.

2. An important implication of this evaluation is that it reinforces the policy of allocating resources flexibly between assessments and other operational work so as to maximize the mutually reinforcing interaction between them.

Attachment

cc: Messrs. H. Wackman, M. Ahmed (EGY)

MAhmed:llh



Attachment

OPERATIONAL IMPACT OF ENERGY ASSESSMENTS

BANGLADESH:

- (i) Identified refinery rehabilitation and conversion program which forms a basis for proposed industry project.
- (ii) Identified industrial energy conservation program also being financed under above project.
- (iii) Identified need for improvement and upgrading gas distribution system in Dacca; basis for proposed petroleum project.
- (iv) Analysis of petroleum sector led to reduction in the planned scope of exploratory drilling program.
- (v) Identification of renewable energy supply projects which are being assisted through technical assistance loan with Dutch cofinancing.
- (vi) Identified need to prepare an integrated medium term energy investment program which is now being financed under the ESMP.

Burundi

- (i) Analysis of hydro options contributed to inclusion of the Ruzizi II project (a multi-national project involving Burundi, Rwanda and Zaire) into the lending program. It has also led to a reevaluation of the economic viability of proposed Rwegura project.
- (ii) Identified technical assistance required for sector management petroleum supply options, and peat development which may be financed through ESMP.

Haiti

- (i) Emphasis on urgent need for reforestation resulted in the bringing forward of the 2nd Forestry project.

Indonesia

- (i) Assessment and subsequent follow up discussions led to major expansion and diversification of Bank lending program. (5 year Energy lending program increased from \$800 million to \$1.2 billion.)

- (ii) Identified projects in geothermal, coal exploration, rural electrification and gas distribution sectors.
- (iii) Identified variety of technical assistance activities now being provided by the region.

Kenya

- (i) Helped define the energy component of the SAL.

Malawi

- (i) The identification of the need to improve fuelwood use efficiency in the tobacco industry has led to a reorientation of the work of the energy studies unit financed under NRDP II and resulted in the inclusion of this program under the proposed SAL II.
- (ii) Identified the need for institutional strengthening at the sectoral level and the technical assistance required to achieve this. This, too, is being tacked under the proposed SAL II operation.

Mauritius

- (i) Assessment mission prepared the energy component of the 1st SAL which was successfully implemented.
- (ii) Identified need for broad spectrum of technical assistance (sector management, training, conservation, bagasse etc) which is being provided under Bank executed TA project financed by UNDP and UK ODA.
- (iii) Assessment follow-up has provided the basis for the Energy Sector component of proposed second SAL.

PNG

- (i) Identified urgent request for gas utilization study which was accomodated in ongoing Petroleum Exploration promotion project.
- (ii) Initiated studies of alternative power development options which will define the scope of the proposed FY85 (6?) power project.
- (iii) Identified urgent need for Energy Management assistance which may be financed through either the Energy Management Assistance Program or through reallocation of funds under an existing Bank/TA project.



Rwanda

- (i) Identified a project for rehabilitation of electric power transmission and distribution system.
- (ii) Analyzed potential for utilization of Lake Kiwu methane gas reserves and identified need for international review panel to cover safety aspects of this program. This panel may be financed through ESMP if bilateral financing is not forthcoming.

Sri Lanka

- (i) Revised demand projections for electricity changed the scope of the power VIII project (reduced size from 120 MW proposed at project appraisal to 80 MW).
- (ii) Emphasis on expanding forestation efforts served to revive dialogue on a Forestry project which the Government had previously wanted to delay because of overall budgetary constraints.
- (iii) Identification of mini-hydro development as priority, led to its inclusion in agricultural project.

Turkey

- (i) Helped to develop an energy action plan which is an input into SAL IV.
- (ii) Strengthened dialogue on institutional reforms essential for further expansion of energy lending program.

Zambia

- (i) Analysis of refinery options led to detailed study being financed under \$4.9 million T.A. project.
- (ii) Identified technical assistance required for coal development and rehabilitation, being financed under \$4.3 million TA project.

Zimbabwe

- (i) Identification of training needs in power sector led to inclusion of \$22 million training and TA component in the Power I Project.

- (ii) Identified need for a detailed study of petroleum fuel supply options which is being financed under a \$1.1. million TA project.
- (iii) Identified a coal exploratory and development project whose first phase is being financed by EIB but the Bank may be involved in financing the 2nd phase.
- (iv) Analysis of power system losses led to preparation of system loss reduction program under UNDP financed global project being executed by the Bank.

MAhmed:cra

2/23/83



Chon

FORM NO. 75  
(9-78)

THE WORLD BANK

ROUTING SLIP		DATE: 2/22/83
NAME		ROOM NO.
Messrs. Rovani, Rao, Bourcier		
Mmes. Ribe, Weaving		
APPROPRIATE DISPOSITION	NOTE AND RETURN	
APPROVAL	NOTE AND SEND ON	
CLEARANCE	PER OUR CONVERSATION	
COMMENT	PER YOUR REQUEST	
FOR ACTION	PREPARE REPLY	
INFORMATION	RECOMMENDATION	
INITIAL	SIGNATURE	
NOTE AND FILE	URGENT	
REMARKS:  Attached is the revised version of Chapter VI of the Energy Policy Paper.		
FROM: Masood Ahmed	ROOM NO.: D449	EXTENSION: 74545

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chron.*

MAhmed:cra  
Energy Policy Paper  
Revised 2/22/83

## CHAPTER VI

### The Role of the World Bank

#### The Developing Countries Energy Problem

6.1 The preceding analysis of energy issues has demonstrated that the process of adjustment to higher commercial energy costs is far from over in the developing countries. Despite the major shifts in pricing structures, investment programs and economic policies that have already taken place in many of these countries, much more remains to be done to ensure that energy is used efficiently and that the formulation of future development strategies incorporates the full effects of higher energy costs. Completion of the adjustment process will also require a major increase in the allocation of investable funds into the energy sector, both for energy production projects and for retrofitting programs to conserve energy. Generating additional resources of these magnitudes would be a challenging task under any circumstances, but it will be particularly difficult in the present international economic climate when growth prospects and overall resource availability are both likely to be constrained for the majority of developing countries. There is a real possibility that in some of these countries, particularly in the lower income ones which have limited access to commercial sources of finance, the pace of adjustment to higher energy costs may be retarded because of a shortage of investment resources. The resource constraint is likely to be less binding in the middle income developing countries, particularly



those which are largely self-sufficient in energy or net exporters of it, but here, too, it is clear that the successful mobilization of additional resources and the effective implementation of a vastly expanded energy investment program will pose a major policy and management challenge.

6.2 To overcome this challenge, energy policymakers in all developing countries will need to place far greater emphasis on three areas:

- (i) pre-investment work aimed at analyzing and defining viable energy development options and formulating costed and prioritized medium term investment programs; this would include not only new energy production projects but also projects to "generate" additional energy by rehabilitating existing energy producing or consuming equipment;
- (ii) preparing a financing plan to meet the investment requirements of the sector and embarking on a major effort to mobilize these resources from both domestic sources and from potential international financing agencies; this would encompass the setting of energy prices at levels which would generate an adequate share of investment resources within the sector and, it would also include a determination of the appropriate roles of public and private agencies in financing energy development; and,
- (iii) strengthening the institutional and management capability in the energy sector both at the national level and at the enterprise level so as to carry out the above tasks; to

implement effectively a larger, more diversified and more complex investment program; and to ensure that the energy implications of policies and investments in other sectors are fully taken into account before these decisions are made.

These tasks have always been a part of efficient sector management but they are much more important now because of the quantum increase in resources that need to be devoted to energy development and because of the increasing complexity of energy sector planning referred to in the preceding chapters.

6.3 This reordering of emphasis will also need to be reflected in the energy assistance programs of international agencies and particularly of multilateral agencies such as the Bank which have an important contribution to make in all these areas. Thus, while the remainder of this chapter deals with the response of the Bank to these issues, many of the conclusions are equally applicable to other international agencies which share the objective of supporting efficient and cost effective energy development in these countries.

#### The World Bank Energy Program

6.4 The principal objective of the World Bank's energy program is to assist developing countries in defining and implementing an appropriate energy sector development and management strategy. This assistance is rendered in a variety of ways ranging from financial support for energy development projects, to technical assistance in evaluating national energy options and priorities, to management assistance in strengthening energy sector institutions and the national energy planning capability.



Although these activities are often carried out as discrete tasks, the distinguishing features of the Bank's involvement is the emphasis on ensuring that all these elements are part of an integrated strategy and a long term commitment to improving the energy prospects of these countries. Thus, in each country the determination of the specific components of the Bank's energy program starts with an analysis of the energy sector priorities for that country, taking into account its broader development context. However, one feature which is common to the Bank's work in all countries and at all stages of the energy development process is an essentially pragmatic and problem solving approach combined with an objective technical evaluation of the comparative benefits of alternative energy development strategies.

6.5 This approach enables the Bank to respond quickly and flexibly to the changing energy needs and circumstances of individual member countries--flexibility which is reflected in the recent evolution of the Bank's activities in the energy sector. The doubling of oil prices in 1973 and again in 1979/80 radically changed the energy situation of the developing countries by increasing, on the one hand, the urgency of tackling the problem of unsustainable energy import bills for the vast majority of OI DC's and by vastly expanding, on the other hand, the range of economically viable indigenous energy development options. The Bank responded to these changes by significantly increasing its energy lending and by diversifying into supporting the development of petroleum, coal and other primary energy resources which it had previously not financed. (See table VI.I below). This process, which was approved by the Bank's board on successive occasions (See Box ), also led to a

growing emphasis on the better management of energy demand and on providing technical assistance to developing countries in the evaluation of major energy issues and options. In collaboration with the UNDP, the Bank embarked upon a 60 country program of energy sector assessments designed to provide a diagnosis of the main energy issues in the country and to serve as a framework for investment and policy decisions by Government and external aid agencies alike (See Box ...). The Bank also stepped up its efforts to function as a catalyst in mobilizing additional funds for energy development in the LDC's from potential private and public capital sources.



Table VI.I - World Bank Energy Lending <sup>1/</sup>  
 (numbers of projects and amounts in US\$, million;  
 fiscal year (FY) starting July 1)

	FY 1979		FY 1980		FY 1981		FY 1982		FY 1983 (est.)	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
Electric Power	19	1,355	24	2,392	17	1,323	21	2,131		
Oil and Gas	4	112	13	385	12	650	14	539		
Coal	-	-	1	72	1	10	3	227		
Other <sup>2/</sup>	-	-	-	-	1	250	6	460		
TOTAL	23	1,467	38	2,849	31	2,233	44	3,358		

<sup>1/</sup> Excludes fuelwood and other energy investments financed as components of projects in industry and agriculture sectors.

<sup>2/</sup> Includes refinery, alcohol and energy projects.

In terms of financial support, the volume of Bank lending for energy has more than doubled since FY 1979 to an estimated \$ billion in FY83. Although this is still a small fraction of the total investment requirements for energy development in the LDC's, it has made the Bank the single most important official source of external capital for energy development in the LDC's. In particular in the poorer developing countries which have limited access to commercial financing sources, the \$0.7 billion of highly concessional IDA financing provided since 197 has made a major contribution to underwriting the process of structural change in the energy sector which will lead to an alleviation of their present crippling dependence on expensive imported oil. Over the 1975-80 period, the World Bank provided almost a third (check) of the total publicly guaranteed borrowing for energy development in the low income developing countries, much of its on IDA terms. In developing its program of energy activities, the Bank has attempted to build upon the traditional strengths which characterize its work in all the sectors in

which it is involved. These can be classified into three groups. First, the contribution made at the project level in terms of competent project selection, formulation and implementation. Second, the contribution made in strengthening indigenous institutions and developing an effective sector planning and management capability. And third, the assistance provided in analyzing and resolving key sector issues and in formulating an appropriate overall sector development strategy. These points are dealt with in the following sections.

#### Project Selection, Design and Implementation

6.6 A traditional objective of Bank financing is to ensure that the projects it finances are well designed, incorporate proper technology, are implemented competently and put into position an agency capable of not only implementing the project but subsequently running and operating it. This is particularly important in the energy sector where technology is evolving rapidly, there is an absence of strong institutions in many countries, and where the cost of delay or wrong choice is high. The Bank's approach to project financing has therefore been qualitatively different from other financing institutions. To ensure that a proposed project conforms to overall national sector priorities, its preparation is preceded by a review of sector objectives, priorities and investment options. Sometimes this work leads to the selection of a project which had previously not been considered by the host country or had been rejected due to incomplete analysis. It can also identify priority investment opportunities which have not been taken up by other financing sources (such as commercial banks or multinational energy companies)



because the investment while attractive from the country's point of view, ranks low according to the global criteria used by these agencies.

6.7 After a particular Bank project has been identified, considerable effort is expended to ensure that its design represents the least cost solution. The scope of the project is discussed in detail between the Bank and the borrower and this close involvement continues well after the project has been approved by the Bank's board. Bank staff are closely involved in setting the arrangements for procuring equipment and services. Through a process of international competitive bidding, procurement is ensured at minimum cost consistent with required quality and specifications appropriate to the needs of the project rather than those promoted by suppliers. Regular supervision of the project sites until it is fully implemented enables the Bank to help resolve technical problems, insist on continued budgetary support for agreed financing of local currency expenditures and ensure that institutional arrangements are modified if necessary for the timely and cost effective completion of the project. Bank staff also assist the borrower in preparing terms of reference for consultants used in project preparation or implementation, in reviewing their qualifications and evaluating their work. At all stages the Bank seeks to ensure that the borrower's interests are safeguarded while at the same time, bringing to bear on each decision an objective perspective and the experience gained by the Bank in dealing with similar problems in other countries.

6.8 A key contribution by the Bank in the project context is the transfer of technology to the borrower. Special efforts are made to incorporate appropriate technology in the project design in an endeavor

not only to enhance project benefits but in the hope that the entire sector may benefit there from. Transferring technology is an underlying objective of a large number of Bank financed energy projects. For example, the Bank financed hydrocarbon projects in China would strengthen the energy base by increasing oil production; more importantly these projects would upgrade the level of technology over a wide range of oil field activities, such as acquisition and processing of geophysical data, drilling and production methods, reservoir engineering and techniques relating to enhanced oil recovery. The objectives and modes of technology transfer in Bank energy projects are discussed briefly in Box 4.1.

#### Institutional Strengthening

6.9 An equally important objective of Bank involvement is to strengthen the indigenous sector management capability in the country. At the project level, this means helping Governments to design implementation arrangements which will help create a corpus of managers to subsequently maintain, operate and expand the facilities provided under the project. Sometimes this approach results in slower implementation of the particular project that could have been attained if the responsibility for project execution has been handed over in its entirety to e.g. experienced expatriate engineering contractors, but the Bank often consciously chooses to give up short term gains in project implementation schedules in favor of securing longer term benefits as well as the development of stronger indigenous institutions. To accomplish this, many projects include the provision of technical assistance to address institutional weaknesses. Studies have also been



financed and systems put into place under Bank projects for improving management information, budgetary control and accounting and financial management. The key feature of this institution building effort--as well as its principal raison d'etre is that it combines a long term development committment with an objective, pragmatic and problem solving approach to tackling the institutional deficiencies that are a cause of concern to both the host country and the Bank.

#### Sectoral Perspective

6.10 The integrative analysis of macroeconomic, sectoral and project priorities is an intrinsic part of the Bank's work. However, the object of this analysis goes far beyond the identification of appropriate investment projects for Bank financing. Rather, this analysis and the ensuing dialogue with national policymakers covers a wide range of sectoral issues such as demand management and pricing, interfuel substitution, investment planning, resource mobilization and the respective roles of public and private agencies in the development of the sector.

6.11 The Bank uses a variety of instruments for carrying out this work. Regular economic reports and special sector studies (such as the Energy Assessment Reports) are one vehicle for analyzing and discussing important sector issues with member governments. Another important vehicle for addressing broad sectoral issues is through the involmment in successive investment projects. At project appraisal and negotiation, agreements are often sought with the government and/or the concerned energy enterprises on issues of broad sectoral relevance as well as those affecting the project more directly. In energy projects the pricing of

petroleum, power and coal is frequently discussed in detail and pricing objectives are set on the basis of an analysis of economic and financial implications of alternative price structures. Specific remedial measures to improve the financial performance of the major energy supply agencies are also generally discussed and agreed with the borrower in the context of project negotiations.

6.12 A good example of the contribution that can be made to resolving sectoral issues through the vehicle of project financing is provided by the history of the Bank's involvement in the petroleum sector in Egypt. In 197 , the Government of Egypt requested the Bank to participate in the financing of a project for the recovery of associated gas which was flared in the Gulf of Suez. The project was relatively straightforward and its economics were attractive. However, in the course of the evaluation of the project, the Bank identified:

- (i) a much larger potential for utilization of associated and non-associated gas than evaluated by the Government;
- (ii) areas which were gas prone and whose exploration had been neglected by private oil companies, partly because of the limited local gas market (and the large infrastructure investment and long lead-time required to develop such a market), as well as inadequate gas pricing provisions, and partly due to the oil companies giving higher priority to finding exportable oil;
- (iii) the need to step up oil exploration as well as substitution of gas for oil consumed domestically to slow down the decline in oil exports; and



(iv) the need to rationalize pricing policies.

As a result of this analysis studies were commissioned to define what further action the Government should take in the sector. The main result is that years after the project was initiated, the Government has at its disposal all the necessary elements to define a long-term gas development strategy and to implement it. Positive measures have already been taken to revive exploration in gas prone areas and correct some of the pricing problems. Considerable progress remains to be made, particularly in the field of energy pricing, but the foundation for a long-term development strategy has been laid which should significantly improve the contribution to the petroleum sector to the overall economic development of Egypt.

6.13 Finally, in addition to sector reports and project work the Bank influences energy policy in its member countries through the dialogue associated with Structural Adjustment Lending. Many of the SAL's approved by the Bank's Board since have had a major focus on the restructuring of policies and programs in the energy sector. This emphasis is expected to continue, because for many developing countries, changes in this sector will effectively determine the success of their overall structural adjustment efforts.

6.14 This multi-dimensional involvement of the Bank in the energy sector has demonstrated the need for using a flexible array of instruments to assist member countries in developing an appropriate energy sector management strategy. However, the success of such efforts depends on two important factors. First, the policy advice that the Bank offers is accompanied by a financial commitment to underwrite a part of

the investments required to overcome a difficult period of transition in the sector. This financial support provides both a degree of leverage and allows for a much greater degree of day to day involvement in assisting the line agencies in identifying and resolving problems as they arise. Indeed, experience has shown that policy advice divorced from operational involvement is seldom as effective or as relevant as it needs to be. Governments recognize this fact and demonstrate it in their receptivity to such advice. The financial involvement of the Bank also serves to underpin the credibility of its advice, which is the second major factor underlying the success of its efforts. However, the high degree of credibility which the Bank enjoys in developing countries is not derived from its financial support alone. Rather, it has to be earned over time in each sector by virtue of the quality of its work and the problem solving nature of its approach. In particular, when offering specific advice of a technical nature to energy supply agencies in these countries, the Bank's staff often have to persuade line managers that their agencies have weaknesses which need outside assistance to be rectified. This too requires a high degree of professional competence to ensure that the Bank's advice is perceived as credible.

#### Special Characteristics of the Bank's Energy Program

6.15 In addition to applying its traditional strengths to the energy sector, the Bank's program in this area has also been moulded to respond to some special features which characterize the prospects and constraints to energy development in the LDC's. Two of these features which deserve particular attention are (i) the urgent need to strengthen the management capability for the sector to a level commensurate with the increased



priority and resources devoted to it; and (ii) the larger scope, than in many other sectors, for mobilizing private financing for energy investments in the developing countries from both commercial lenders and equity investors.

#### Strengthening Energy Sector Management

6.16 The urgent need for strengthening the energy sector planning and management capability in developing countries has already been discussed in Chapter IV. The need to evaluate increasingly diverse and complex energy options, to develop sector investment programs and to solicit large volumes of investment finance from a variety of sources, and to enter into an effective technical and policy dialogue with potential private investors all require a much stronger national energy sector management capability than currently exists in the vast majority of developing countries. To respond to this need the Bank has stepped up its program of formal and informal technical assistance in energy at both the agency and sectoral levels. In particular, the Energy Sector Management Program (described in Box ...) provides a good example of a flexible and quick response to an emerging need identified through both project and sector work in these countries. Although the program has only just got underway, about a dozen developing countries have already requested assistance to analyze institutional issues and to strengthen their sector management capability. This type of assistance is also being increasingly provided under the aegis of regular Bank investment projects. Nearly all the petroleum exploration promotion projects financed by the Bank, for example, provide assistance at the sectoral level in setting up an indigenous capability to legislate and monitor the

petroleum exploration and development activities in the country.

6.17 This work has been facilitated by the contribution that the Energy Assessment Reports have made in helping to define "energy" as an "integrated sector" in many developing countries. By highlighting the interaction that exists among policies and programs in the various energy supply subsectors (e.g. fuelwood, coal, petroleum, electricity, etc), they have served to identify the issues of coordination among these subsectors which had previously been neglected.

Emphasis on Cofinancing

6.18 The emphasis placed by the Bank on the cofinancing of its energy projects stems from three factors. First, from a recognition of the fact that the substantial investment requirements for energy development in the LDC's require a major effort in mobilizing funds from all potential sources. Second, because projects in the energy sector are more likely to attract cofinancing than in many other sectors because of the wide interest in energy development by both private and official financing agencies. And third, because projects supported by the Bank offer attractive opportunities for cofinancing because of a variety of reasons: the project will have been thoroughly appraised from the technical, financial, economic and institutional viewpoints; the execution of the project will be supervised in detail by qualified Bank staff; the financial participation of the Bank may impart greater stability to the relationship between the borrower and other financing agencies; and it is possible for the Bank to take the latter maturities in a joint syndication, thereby allowing commercial lenders to acquire relatively early repayment of their loans. Given these factors, the Bank



has actively sought to mobilize cofinancing funds for its energy projects in collaboration with the borrowing country concerned. These efforts have met with some success. During the FY 1979-82 period, the \$ billion of Bank lending for energy was associated with \$ billion of cofinancing from bilateral and other multilateral agencies, export and suppliers credits, as well as commercial banks and private sources. As shown in Table 6.2 below, the "average" Bank energy project over this period had a total cost of US\$ 322.6 million with a foreign exchange component of 48%. The Bank financed an average of 22% of the total cost (46% of foreign exchange cost) while external cofinancing covered 25% of the total cost (51% of foreign exchange cost) respectively. On average, therefore, the government and/or the local sponsor financed the entire local currency cost plus about 3% of the foreign exchange cost of these projects. However, there are marked differences in financing patterns between pre-development/engineering type projects and development type projects as well as among projects in the various energy subsectors (i.e. petroleum, power, coal, etc.). Pre-development and engineering projects (average cost US\$ 16 million) have a higher proportion of foreign exchange cost (72% average). Because of their higher risks, small loan amounts and the need for speedy implementation these projects are not very attractive to many financing agencies and the Bank has had to finance a larger share of their total cost than is the case for development projects.

Table VI.2 - Financing of World Bank Energy Projects  
(FY 1980 - FY 1982)

<u>Sector</u> <u>1/</u>	Share in Total Project Cost (%)		Share in Foreign Exchange Cost (%)	
	Bank/IDA	Other External	Bank/IDA	Other External
Oil and Gas (43)	30	45	38	57
Pre-development (28)	66	8	88	11
Development (15) <u>2/</u>	27	48	34	61
<u>Power</u> (83)	23	24	53	54
<u>Coal</u> (5)	<u>20</u>	<u>25</u>	<u>32</u>	<u>42</u>
<u>All Energy Projects</u> <u>3/</u> (138)	22	25	46	51

1/ Numbers of projects in brackets.

2/ Excluding the Ivory Coast project, the figures in this row are 37, 27, 47, 36 respectively.

3/ Includes 'other' energy projects

Source: World Bank [D. Carpio]

6.19 In terms of sectoral patterns, the highest degree of cofinancing has been associated with the oil and gas program where every \$1 of Bank financing was matched by \$1.49 from other cofinanciers. In this sector, the Bank has been successful in mobilizing all form of cofinancing for gas development, but so far, bilateral/multilateral sources have not contributed as much to oil development projects as in the gas and power area. The cofinancing ratios for the other energy subsectors were 1.28:1 for coal projects, 1.03:1 for power projects and 0.96:1 for other energy projects (refineries, biomass, etc.).



6.20 The extent of cofinancing is an important feature of Bank projects but three important caveats deserve mention. First, it should be pointed out that in some cases these co-financing ratios lose their meaning because the project is best seen as part of an ongoing program of investment to achieve certain objectives. In such situations, the Bank may select a subset of the investments which is important and in which it has a special contribution to offer. Bank finance may represent a relatively high share of the "project's" costs while remaining a relatively small share of the costs of the whole investment program (see Box 6.1 [on Bombay High II or other example]). Moreover, even if a project is highly successful in attracting co-finance, there is a minimum participation by the Bank that is necessary to ensure that the Bank's judgement is accorded due weight in decisions affecting the project and, further, that the Bank is able to seek agreements with the Government and concerned enterprises on sensitive matters affecting sector policy and institutional arrangements. In some cases, it may be necessary to apply this criterion not only to the Bank's share of the whole project but to its share in specific components of the projects that will enable the Bank to be closely involved in the project until its completion, although these components may be particularly attractive to other credit agencies that lack the technical expertise to supervise project execution (e.g. Peru II). In such cases, the Bank may be required to finance a higher proportion of project cost in order to assure satisfactory project completion.

6.21 The second caveat is that while individual projects may offer

useful vehicles for mobilizing cofinancing, the decision on the appropriate pattern of energy development from various capital sources is one that must be taken at the country level. In some countries, the overall foreign financing pattern and debt service ratios may be such that extensive commercial financing for a particular energy project may not be desirable from a national viewpoint even though it is feasible from the project or project executing agency's standpoint. In these cases, the size of the Bank's participation in financing an energy development project will be determined as much on country creditworthiness and macro-financing grounds as on project financing criteria alone.

6.22 Finally, it is important to recognize that in a great many developing countries the prospects for a substantial expansion in commercial bank lending for any sector are severely limited because of poor country creditworthiness considerations. The vast majority of lower income developing countries fall into this group but as recent events have demonstrated, this constraint can also apply to some of the middle income developing countries whose capacity to service a rising external debt is becoming increasingly strained. For this group of countries, attractive project economics will seldom override the limits imposed on commercial lending by the perceptions of country risk and creditworthiness. And yet these are also the countries which frequently have the most pressing need to restructure their pattern of energy supply by developing indigenous energy resources. To help them achieve this important transition the Bank and other official financing agencies will often need to provide a much larger share of energy project costs.



6.23 The use of project or non-recourse financing is one way of mobilizing additional commercial finance in these countries. However, as discussed in paras. 5... above, the conditions necessary for successful non-recourse financing of energy projects are likely to prevail in only a limited number of countries and for certain specific categories of projects. Thus, while this vehicle should be promoted, particularly in developing the large, export oriented projects in the petroleum and coal sectors, it is unlikely to have widespread applicability in the developing countries in the near future.

Promoting Direct Private Investment

6.24 In addition to the emphasis on cofinancing, the Bank's Energy program is also oriented to promoting direct equity investments into LDC energy development by the international energy industry. The largest potential for this is, of course, in the oil and gas sector where the international petroleum industry has traditionally made a major technical and financial contribution in the developing countries. A variety of instruments are used to pursue this objective. Exploration promotion projects are expressly designed to rekindle private sector interest in exploration and development by providing a better geological data base, rationalized and clearer incentive and contractual frameworks and a stronger legal and institutional capability in the sector.

6.25 Other promotional vehicles are also utilized. Exploration drilling and reserve audits financed by the Bank often have beneficial side effects. For example, delineation drilling to demonstrate sufficient gas reserves to justify an export pipeline to Brazil had the

additional effect of [to be filled in]. Sometimes infrastructure investments financed by the Bank help firm up private involvement in exploration and appraisal. In Thailand, the Bank supported gas pipeline has rekindled private exploratory interest in potential gas deposits situated adjacent to the pipeline. Finally, the Bank may issue "letter of cooperation" and other arrangements to reduce the perception of political risk when asked to do so by the host Government and the private investor concerned.

6.26 In addition to these specific instruments, the Bank also assists in accelerating the pace of private investment in the energy sector by identifying and discussing with national policymakers broader sectoral issues which may be acting as obstacles to this expansion. Producer pricing for gas and oil, particularly as it relates to secondary recovery from producing fields is one issue which is frequently a subject of analysis. The country's overall approach to private energy investment and the allocation of prospective acreage between the private sector and the national oil company is another important issue.

6.27 In carrying out this dialogue the Bank's primary objective is to accelerate the pace of energy development in its member countries consistent with their broader development objectives. The Bank recognizes the crucial role of the international energy industry in achieving this objective. However, its experience has also demonstrated that in a number of circumstances the activities of the private sector alone may simply not be adequate in scope or timing. Those circumstances, which were discussed in Chapter III above, include the limited interest of international oil companies in developing small oil



fields or gas resources which have little export potential, the effect of current corporate cash constraints on the size of industry exploration investments in the developing countries, the unwillingness of the industry to invest in countries perceived as high political or economic risks, or a simple divergence in the priorities attached to a particular energy development project by an industry with global investment options and the country for whom this may be the only prospect for improving its energy supply situation. These limitations may necessitate the allocation of public resources to energy development in a number of countries and as a development institution the Bank is ready to support these national efforts when it is convinced that they are an appropriate feature of the country's optimal sectoral and national development strategy.

#### Proposed Scope of the Bank's Energy Program

6.28 The growth prospects of the developing countries depend on many factors, but one of the central ones will be their ability to successfully restructure their energy supply and consumption patterns in response to higher energy costs. Until this process of transition has been successfully completed, energy will continue to be a priority sector in the Bank's overall program.

6.29 The analysis in this report has emphasized the massive need for financial and technical assistance to the developing countries to enable them to embark upon and successfully implement the investment and policy initiatives that are necessary in the energy sector. The World Bank can only provide a fraction of these requirements, within the overall resource constraints that govern its activities. Over the FY84-88

period, the currently planned scale of Bank lending for energy development is of the order of \$...bn. As shown in table VI.3 below, this lending is expected to continue to support a diversified range of projects in the various energy subsectors, reflecting the increasingly diversified nature of energy investments in the developing countries themselves. In individual countries, the scale and composition of energy lending will continue to be determined on the basis of the country's overall sector and national development priorities.

Table VI.3

Currently Planned World Bank Energy Lending

FY84-88

<u>Sub-Sector</u>	(Millions of 1983 \$Dn	<u>%</u>
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To be filled in

6.30 This volume of lending is of course considerably below the levels that would be justified by the needs of developing countries and the availability of economically attractive energy projects suitable for Bank financing. However, given the Bank's overall resource availability a larger volume of energy lending could only be accomplished by displacing high priority projects in other important sectors. The above figures therefore assume a continuation of the 25% ceiling on energy lending as a % of total Bank lending that the Bank has imposed on the sector.

6.31 In addition to direct financial support for energy investments,



the Bank will continue to place an increasing emphasis on the provision of technical assistance and advice to energy policy makers in its member countries. The Energy Assessment Program is expected to cover a further 24 countries in the next 18 months bringing the total number of countries covered in this program to 35. A special small country energy assessment program is also planned with the collaboration of UNDP and interested donor countries. Informal sector work and sub-sector analysis is also expected to increase in the near future. The Energy Sector Management Program will also begin full scale operation in the coming year to provide the pre-investment policy and institutional support which has clearly been identified as a high priority for the sector.

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CHAPTER VI

The Role of the World Bank

The Developing Countries Energy Problem

6.1 The preceeding analysis of energy issues has demonstrated that the process of adjustment to higher commercial energy costs is far from over in the developing countries. Despite the major shifts in pricing structures, investment programs and economic policies that have already taken place in many of these countries, much more remains to be done to ensure that energy is used efficiently and that the formulation of future development strategies incorporates the full effects of higher energy costs. Completion of the adjustment process will also require a major increase in the allocation of investable funds into the energy sector, both for energy production projects and for retrofitting programs to conserve energy. Generating additional resources of these magnitudes would be a challenging task under any circumstances, but it will be particularly difficult in the present international economic climate when growth prospects and overall resource availability are both likely to be constrained for the majority of developing countries. There is a real possibility that in some of these countries, particularly in the lower income ones which have limited access to commercial sources of finance, the pace of adjustment to higher energy costs may be retarded because of a shortage of investment resources. The resource constraint is likely to be less binding in the middle income developing countries, particularly



those which are largely self-sufficient in energy or net exporters of it, but here, too, it is clear that the successful mobilization of additional resources and the effective implementation of a vastly expanded energy investment program will pose a major policy and management challenge.

6.2 To overcome this challenge, energy policymakers in all developing countries will need to place far greater emphasis on three areas:

- (i) pre-investment work aimed at analyzing and defining viable energy development options and formulating costed and prioritized medium term investment programs; this would include not only new energy production projects but also projects to "generate" additional energy by rehabilitating existing energy producing or consuming equipment;
- (ii) preparing a financing plan to meet the investment requirements of the sector and embarking on a major effort to mobilize these resources from both domestic sources and from potential international financing agencies; this would encompass the setting of energy prices at levels which would generate an adequate share of investment resources within the sector and, it would also include a determination of the appropriate roles of public and private agencies in financing energy development; and,
- (iii) strengthening the institutional and management capability in the energy sector both at the national level and at the enterprise level so as to carry out the above tasks; to

implement effectively a larger, more diversified and more complex investment program; and to ensure that the energy implications of policies and investments in other sectors are fully taken into account before these decisions are made.

These tasks have always been a part of efficient sector management but they are much more important now because of the quantum increase in resources that need to be devoted to energy development and because of the increasing complexity of energy sector planning referred to in the preceding chapters.

6.3 This reordering of emphasis will also need to be reflected in the energy assistance programs of international agencies and particularly of multilateral agencies such as the Bank which have an important contribution to make in all these areas. Thus, while the remainder of this chapter deals with the response of the Bank to these issues, many of the conclusions are equally applicable to other international agencies which share the objective of supporting efficient and cost effective energy development in these countries.

#### The World Bank Energy Program

6.4 The principal objective of the World Bank's energy program is to assist developing countries in defining and implementing an appropriate energy sector development and management strategy. This assistance is rendered in a variety of ways ranging from financial support for energy development projects, to technical assistance in evaluating national energy options and priorities, to management assistance in strengthening energy sector institutions and the national energy planning capability.



Although these activities are often carried out as discrete tasks, the distinguishing features of the Bank's involvement <sup>is</sup> of the emphasis on ensuring that all these elements are part of an integrated strategy and a long term commitment to improving the energy prospects of these countries. Thus, in each country the determination of the specific components of the Bank's energy program starts with an analysis of the energy sector priorities for that country, taking into account its broader development context. However, one feature which is common to the Bank's work in all countries and at all stages of the energy development process is an essentially pragmatic and problem solving approach combined with an objective technical evaluation of the comparative benefits of alternative energy development strategies.

6.5 This approach enables the Bank to respond quickly and flexibly to the changing energy needs and circumstances of individual member countries--flexibility which is reflected in the recent evolution of the Bank's activities in the energy sector. The doubling of oil prices in 1973 and again in 1979/80 radically changed the energy situation of the developing countries by increasing, on the one hand, the urgency of tackling the problem of unsustainable energy import bills for the vast majority of OIIDC's and by vastly expanding, on the other hand, the range of economically viable indigenous energy development options. The Bank responded to these changes by significantly increasing its energy lending and by diversifying into supporting the development of petroleum, coal and other primary energy resources which it had previously not financed. (See table VI.I below). This process, which was approved by the Bank's board on successive occasions (See Box ), also led to a

growing emphasis on the better management of energy demand and on providing technical assistance to developing countries in the evaluation of major energy issues and options. In collaboration with the UNDP, the Bank embarked upon a 60 country program of energy sector assessments designed to provide a diagnosis of the main energy issues in the country and to serve as a framework for investment and policy decisions by Government and external aid agencies alike (See Box ...). The Bank also stepped up its efforts to function as a catalyst in mobilizing additional funds for energy development in the LDC's from potential private and public capital sources.



Table VI.I - World Bank Energy Lending <sup>1/</sup>  
 (numbers of projects and amounts in US\$, million;  
 fiscal year (FY) starting July 1)

	FY 1979		FY 1980		FY 1981		FY 1982		FY 1983 (est.)	
	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
Electric Power	19	1,355	24	2,392	17	1,323	21	2,131		
Oil and Gas	4	112	13	385	12	650	14	539		
Coal	-	-	1	72	1	10	3	227		
Other <sup>2/</sup>	-	-	-	-	1	250	6	460		
TOTAL	23	1,467	38	2,849	31	2,233	44	3,358		

<sup>1/</sup> Excludes fuelwood and other energy investments financed as components of projects in industry and agriculture sectors.

<sup>2/</sup> Includes refinery, alcohol and energy projects.

In terms of financial support, the volume of Bank lending for energy has more than doubled since FY 1979 to an estimated \$ billion in FY83. Although this is still a small fraction of the total investment requirements for energy development in the LDC's, it has made the Bank the single most important official source of external capital for energy development in the LDC's. In particular in the poorer developing countries which have limited access to commercial financing sources, the \$0.7 billion of highly concessional IDA financing provided since 197 has made a major contribution to underwriting the process of structural change in the energy sector which will lead to an alleviation of their present crippling dependence on expensive imported oil. Over the 1975-80 period, the World Bank provided almost a third (check) of the total publicly guaranteed borrowing for energy development in the low income developing countries, much of its on IDA terms. In developing its program of energy activities, the Bank has attempted to build upon the traditional strengths which characterize its work in all the sectors in

which it is involved. These can be classified into three groups. First, the contribution made at the project level in terms of competent project selection, formulation and implementation. Second, the contribution made in strengthening indigenous institutions and developing an effective sector planning and management capability. And third, the assistance provided in analyzing and resolving key sector issues and in formulating an appropriate overall sector development strategy. These points are dealt with in the following sections.

#### Project Selection, Design and Implementation

6.6 A traditional objective of Bank financing is to ensure that the projects it finances are well designed, incorporate proper technology, are implemented competently and put into position an agency capable of not only implementing the project but subsequently running and operating it. This is particularly important in the energy sector where technology is evolving rapidly, there is an absence of strong institutions in many countries, and where the cost of delay or wrong choice is high. The Bank's approach to project financing has therefore been qualitatively different from other financing institutions. To ensure that a proposed project conforms to overall national sector priorities, its preparation is preceded by a review of sector objectives, priorities and investment options. Sometimes this work leads to the selection of a project which had previously not been considered by the host country or had been rejected due to incomplete analysis. It can also identify priority investment opportunities which have not been taken up by other financing sources (such as commercial banks or multinational energy companies)



because the investment while attractive from the country's point of view, ranks low according to the global criteria used by these agencies.

6.7 After a particular Bank project has been identified, considerable effort is expended to ensure that its design represents the least cost solution. The scope of the project is discussed in detail between the Bank and the borrower and, this close involvement continues well after the project has been approved by the Bank's board. Bank staff are closely involved in setting the arrangements for procuring equipment and services. Through a process of international competitive bidding, procurement is ensured at minimum cost consistent with required quality and specifications appropriate to the needs of the project rather than those promoted by suppliers. Regular supervision of the project sites until it is fully implemented enables the Bank to help resolve technical problems, insist on continued budgetary support for agreed financing of local currency expenditures and ensure that institutional arrangements are modified if necessary for the timely and cost effective completion of the project. Bank staff also assist the borrower in preparing terms of reference for consultants used in project preparation or implementation, in reviewing their qualifications and evaluating their work. At all stages the Bank seeks to ensure that the borrower's interests are safeguarded while at the same time, bringing to bear on each decision an objective perspective and the experience gained by the Bank in dealing with similar problems in other countries.

6.8 A key contribution by the Bank in the project context is the transfer of technology to the borrower. Special efforts are made to incorporate appropriate technology in the project design in an endeavor

not only to enhance project benefits but in the hope that the entire sector may benefit there from. Transferring technology is an underlying objective of a large number of Bank financed energy projects. For example, the Bank financed hydrocarbon projects in China would strengthen the energy base by increasing oil production; more importantly these projects would upgrade the level of technology over a wide range of oil field activities, such as acquisition and processing of geophysical data, drilling and production methods, reservoir engineering and techniques relating to enhanced oil recovery. The objectives and modes of technology transfer in Bank energy projects are discussed briefly in Box 4.1.

#### Institutional Strengthening

6.9 An equally important objective of Bank involvement is to strengthen the indigenous sector management capability in the country. At the project level, this means helping Governments to design implementation arrangements which will help create a corpus of managers to subsequently maintain, operate and expand the facilities provided under the project. Sometimes this approach results in slower implementation of the particular project that could have been attained if the responsibility for project execution has been handed over in its entirety to e.g. experienced expatriate engineering contractors, but the Bank often consciously chooses to give up short term gains in project implementation schedules in favor of securing longer term benefits as well as the development of stronger indigenous institutions. To accomplish this, many projects include the provision of technical assistance to address institutional weaknesses. Studies have also been financed and systems put into place under Bank projects



for improving management information, budgetary control and accounting and financial management. The key feature of this institution building effort--as well as its principal raison d'etre is that it combines a long term development committment with an objective, pragmatic and problem solving approach to tackling the institutional deficiencies that are a cause of concern to both the host country and the Bank.

#### Sectoral Perspective

6.10 The integrative analysis of macroeconomic, sectoral and project priorities is an intrinsic part of the Bank's work. However, the object of this analysis goes far beyond the identification of appropriate investment projects for Bank financing. Rather, this analysis and the ensuing dialogue with national policymakers covers a wide range of sectoral issues such as demand management and pricing, interfuel substitution, investment planning, resource mobilization and the respective roles of public and private agencies in the development of the sector.

6.11 The Bank uses a variety of instruments for carrying out this work. Regular economic reports and special sector studies (such as the Energy Assessment Reports) are one vehicle for analyzing and discussing important sector issues with member governments. Another important vehicle for addressing broad sectoral issues is through the involmnet in successive investment projects. At project appraisal and negotiation, agreements are often sought with the government and/or the concerned energy enterprises on issues of broad sectoral relevance as well as those affecting the project more directly. In energy projects the pricing of petroleum, power and coal is frequently discussed in detail and pricing

objectives are set on the basis of an analysis of economic and financial implications of alternative price structures. Specific remedial measures to improve the financial performance of the major energy supply agencies are also generally discussed and agreed with the borrower in the context of project negotiations.

6.12 A good example of the contribution that can be made to resolving sectoral issues through the vehicle of project financing is provided by the history of the Bank's involvement in the petroleum sector in Egypt. In 197 , the Government of Egypt requested the Bank to participate in the financing of a project for the recovery of associated gas which was flared in the Gulf of Suez. The project was relatively straightforward and its economics were attractive. However, in the course of the evaluation of the project, the Bank identified:

- (i) a much larger potential for utilization of associated and non-associated gas than evaluated by the Government;
- (ii) areas which were gas prone and whose exploration had been neglected by private oil companies, partly because of the limited local gas market (and the large infrastructure investment and long lead-time required to develop such a market), as well as inadequate gas pricing provisions, and partly due to the oil companies giving higher priority to finding exportable oil;
- (iii) the need to step up oil exploration as well as substitution of gas for oil consumed domestically to slow down the decline in oil exports; and
- (iv) the need to rationalize pricing policies.



As a result of this analysis studies were commissioned to define what further action the Government should take in the sector. The main result is that years after the project was initiated, the Government has at its disposal all the necessary elements to define a long-term gas development strategy and to implement it. Positive measures have already been taken to revive exploration in gas prone areas and correct some of the pricing problems. Considerable progress remains to be made, particularly in the field of energy pricing, but the foundation for a long-term development strategy has been laid which should significantly improve the contribution to the petroleum sector to the overall economic development of Egypt.

6.13 Finally, in addition to sector reports and project work the Bank influences energy policy in its member countries through the dialogue associated with Structural Adjustment Lending. Many of the SAL's approved by the Bank's Board since have had a major focus on the restructuring of policies and programs in the energy sector. This emphasis is expected to continue, because for many developing countries, changes in this sector will effectively determine the success of their overall structural adjustment efforts.

6.14 This multi-dimensional involvement of the Bank in the energy sector has demonstrated the need for using a flexible array of instruments to assist member countries in developing an appropriate energy sector management strategy. However, the success of such efforts depends on two important factors. First, the policy advice that the Bank offers is accompanied by a financial commitment to underwrite a part of the investments required to overcome a difficult period of transition in

the sector. This financial support provides both a degree of leverage and allows for a much greater degree of day to day involvement in assisting the line agencies in identifying and resolving problems as they arise. Indeed, experience has shown that policy advice divorced from operational involvement is seldom as effective or as relevant as it needs to be. Governments recognize this fact and demonstrate it in their receptivity to such advice. The financial involvement of the Bank also serves to underpin the credibility of its advice, which is the second major factor underlying the success of its efforts. However, the high degree of credibility which the Bank enjoys in developing countries is not derived from its financial support alone. Rather, it has to be earned over time in each sector by virtue of the quality of its work and the problem solving nature of its approach. In particular, when offering specific advice of a technical nature to energy supply agencies in these countries, the Bank's staff often have to persuade line managers that their agencies have weaknesses which need outside assistance to be rectified. This too requires a high degree of professional competence to ensure that the Bank's advice is perceived as credible.

#### Special Characteristics of the Bank's Energy Program

6.15 In addition to applying its traditional strengths to the energy sector, the Bank's program in this area has also been moulded to respond to some special features which characterize the prospects and constraints to energy development in the LDC's. Two of these features which deserve particular attention are (i) the urgent need to strengthen the management capability for the sector to a level commensurate with the increased priority and resources devoted to it; and (ii) the larger scope, than in



many other sectors, for mobilizing private financing for energy investments in the developing countries from both commercial lenders and equity investors.

#### Strengthening Energy Sector Management

6.16 The urgent need for strengthening the energy sector planning and management capability in developing countries has already been discussed in Chapter IV. The need to evaluate increasingly diverse and complex energy options, to develop sector investment programs and to solicit large volumes of investment finance from a variety of sources, and to enter into an effective technical and policy dialogue with potential private investors all require a much stronger national energy sector management capability than currently exists in the vast majority of developing countries. To respond to this need the Bank has stepped up its program of formal and informal technical assistance in energy at both the agency and sectoral levels. In particular, the Energy Sector Management Program (described in Box ...) provides a good example of a flexible and quick response to an emerging need identified through both project and sector work in these countries. Although the program has only just got underway, about a dozen developing countries have already <sup>requested</sup> ~~required~~ assistance to analyze institutional issues and to strengthen their sector management capability. This type of assistance is also being increasingly provided under the aegis of regular Bank investment projects. Nearly all the petroleum exploration promotion projects financed by the Bank, for example, provide assistance at the sectoral level in setting up an indigenous capability to legislate and monitor the petroleum exploration and development activities in the country.

6.17 This work has been facilitated by the contribution that the Energy Assessment Reports have made in helping to define "energy" as an "integrated sector" in many developing countries, <sup>B</sup> by highlighting the interaction that exists among policies and programs in the various energy supply subsectors (e.g. fuelwood, coal, petroleum, electricity, etc). ~~In~~ <sup>they have</sup> turn, this has served to identify the issues of coordination among these subsectors which had previously been neglected, ~~partly because the interlinkages among them had not been perceived as clearly.~~

Emphasis on Cofinancing

6.18 The emphasis placed by the Bank on the cofinancing of its energy projects stems from three factors. First, from a recognition of the fact that the substantial investment requirements for energy development in the LDC's require a major effort in mobilizing funds from all potential sources. Second, because projects in the energy sector are more likely to attract cofinancing than in many other sectors because of the wide interest in energy development by both private and official financing agencies. And third, because projects supported by the Bank offer attractive opportunities for cofinancing because of a variety of reasons: the project will have been thoroughly appraised from the technical, financial, economic and institutional viewpoints; the execution of the project will be supervised in detail by qualified Bank staff; the financial participation of the Bank may impart greater stability to the relationship between the borrower and other financing agencies; and it is possible for the Bank to take the latter maturities in a joint syndication, thereby allowing commercial lenders to acquire relatively early repayment of their loans. Given these factors, the Bank



has actively sought to mobilize cofinancing funds for its energy projects in collaboration with the borrowing country concerned. These efforts have met with some success. During the FY 1979-82 period, the \$ billion of Bank lending for energy was associated with \$ billion of cofinancing from bilateral and other multilateral agencies, export and suppliers credits, as well as commercial banks and private sources. As shown in Table 6.2 below, the "average" Bank energy project over this period had a total cost of US\$ 322.6 million with a foreign exchange component of 48%. The Bank financed an average of 22% of the total cost (46% of foreign exchange cost) while external cofinancing covered 25% of the total cost (51% of foreign exchange cost) respectively. On average, therefore, the government and/or the local sponsor financed the entire local currency cost plus about 3% of the foreign exchange cost of these projects. However, there are marked differences in financing patterns between pre-development/engineering type projects and development type projects as well as among projects in the various energy subsectors (i.e. petroleum, power, coal, etc.). Pre-development and engineering projects (average cost US\$ 16 million) have a higher proportion of foreign exchange cost (72% average). Because of their higher risks, small loan amounts and the need for speedy implementation these projects are not very attractive to many financing agencies and the Bank has had to finance a larger share of their total cost than is the case for development projects.

Table VI.2 - Financing of World Bank Energy Projects  
(FY 1980 - FY 1982)

<u>Sector</u> <sup>1/</sup>	Share in Total Project Cost (%)		Share in Foreign Exchange Cost (%)	
	Bank/IDA	Other External	Bank/IDA	Other External
Oil and Gas (43)	30	45	38	57
Pre-development (28)	66	8	88	11
Development (15) <sup>2/</sup>	27	48	34	61
<u>Power</u> (83)	23	24	53	54
<u>Coal</u> (5)	<u>20</u>	<u>25</u>	<u>32</u>	<u>42</u>
<u>All Energy Projects</u> <sup>3/</sup> (138)	22	25	46	51

<sup>1/</sup> Numbers of projects in brackets.

<sup>2/</sup> Excluding the Ivory Coast project, the figures in this row are 37, 27, 47, 36 respectively.

<sup>3/</sup> Includes 'other' energy projects

Source: World Bank [D. Carpio]

6.19 In terms of sectoral patterns, the highest degree of cofinancing has been associated with the oil and gas program where every \$1 of Bank financing was matched by \$1.49 from other cofinanciers. In this sector, the Bank has been successful in mobilizing all form of cofinancing for gas development, but so far, bilateral/multilateral sources have not contributed as much to oil development projects as in the gas and power area. The cofinancing ratios for the other energy subsectors were 1.28:1 for coal projects, 1.03:1 for power projects and 0.96:1 for other energy projects (refineries, biomass, etc.).



6.20 The extent of cofinancing is an important feature of Bank projects but three important caveats deserve mention. First, it should be pointed out that in some cases these co-financing ratios lose their meaning because the project is best seen as part of an ongoing program of investment to achieve certain objectives. In such situations, the Bank may select a subset of the investments which is important and in which it has a special contribution to offer. Bank finance may represent a relatively high share of the "project's" costs while remaining a relatively small share of the costs of the whole investment program (see Box 6.1 [on Bombay High II or other example]). Moreover, even if a project is highly successful in attracting co-finance, there is a minimum participation by the Bank that is necessary to ensure that the Bank's judgement is accorded due weight in decisions affecting the project and, further, that the Bank is able to seek agreements with the Government and concerned enterprises on sensitive matters affecting sector policy and institutional arrangements. In some cases, it may be necessary to apply this criterion not only to the Bank's share of the whole project but to its share in specific components of the projects that will enable the Bank to be closely involved in the project until its completion, although these components may be particularly attractive to other credit agencies that lack the technical expertise to supervise project execution (e.g. Peru II). In such cases, the Bank may be required to finance a higher proportion of project cost in order to assure satisfactory project completion.

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appropriate pattern of energy development from various capital sources is one that must be taken at the country level. In some countries, the overall foreign financing pattern and debt service ratios may be such that extensive commercial financing for a particular energy project may not be desirable from a national viewpoint even though it is feasible from the project or project executing agency's standpoint. In these cases, the size of the Bank's participation in financing an energy development project will be determined as much on country creditworthiness and macro-financing grounds as on project financing criteria alone.

6.22 Finally, it is important to recognize that in a great many developing countries the prospects for a substantial expansion in commercial bank lending for any sector are severely limited because of poor country creditworthiness consideration<sup>s</sup>. The vast majority of lower income developing countries fall into this group but as recent events have demonstrated, this constraint can also apply to some of the middle income developing countries whose capacity to service a rising external debt is becoming increasingly strained. For this group of countries, attractive project economics will seldom override the limits imposed on commercial lending by the perceptions of country risk and creditworthiness. And yet these are also the countries which frequently have the most pressing need to restructure their pattern of energy supply by developing indigenous energy resources. To help them achieve this important transition the Bank and other official financing agencies will often need to provide a much larger share of energy project costs.



6.23 The use of project or non-recourse financing is one way of mobilizing additional commercial finance in these countries. However, as discussed in paras. 5... above, the conditions necessary for successful non-recourse financing of energy projects are likely to prevail in only a limited number of countries and <sup>for</sup> ~~to~~ certain specific categories of projects. Thus, while this vehicle should be promoted, particularly in developing the large, export oriented projects in the petroleum and coal sectors, it is unlikely to have widespread applicability in the developing countries in the near future.

#### Promoting Direct Private Investment

6.24 In addition to the emphasis on cofinancing, the Bank's Energy program is also oriented to promoting direct equity investments into LDC energy development by the international energy industry. The largest potential for this is, of course, in the oil and gas sector where the international petroleum industry has traditionally made a major technical and financial contribution in the developing countries. A variety of instruments are used to pursue this objective. Exploration promotion projects are expressly designed to rekindle private sector interest in exploratory <sup>ion</sup> ~~and~~ development by providing ~~in~~ a better geological data base, rationalized and clearer incentive and contractual frameworks and a stronger legal and institutional capability in the sector.

6.25 Other promotional vehicles are also utilized. Exploration drilling and reserve audits financed by the Bank often have beneficial side effects. For example, delineation drilling to demonstrate sufficient gas reserves to justify an export pipeline to Brazil had the additional effect of [to be filled in]. Sometimes <sup>infrastructure</sup> ~~inprostructive~~

investments financed by the Bank help firm up private involvement in exploration and appraisal. In Thailand, the Bank supported gas pipeline has rekindled private exploratory interest in potential gas deposits situated adjacent to the pipeline. Finally, the Bank may issue "letter of cooperation" and other arrangements to reduce the perception of political risk when asked to do so by the host Government and the private investor concerned.

6.26 In addition to these specific instruments, the Bank also assists in accelerating the pace of private investment in the energy sector by identifying and discussing with national policymakers broader sectoral <sup>issues</sup> which may be acting as obstacles to this expansion. Producer pricing for gas and oil, particularly as it relates to secondary recovery from producing fields is one issue which is frequently a subject of analysis. The country's overall approach to private energy investment and the allocation of prospective acreage between the private sector and the national oil company is another important issue.

6.27 In carrying out this dialogue the Bank's primary objective is to accelerate the pace of energy development in its member countries consistent with their broader development objectives. The Bank recognizes the crucial role of the international energy industry in achieving this objective. However, its experience has also demonstrated that in a number of circumstances the activities of the private sector alone may simply not be adequate in scope or timing. Those circumstances, which were discussed in Chapter III above, include the limited interest of international oil companies in developing small oil fields or gas resources which have little export potential, the effect of



current corporate cash constraints <sup>n</sup> of the size of industry exploration investments in the developing countries, the unwillingness of the industry to invest in countries perceived as high political or economic risks, or a simple divergence in the priorities attached to a particular energy development project by an industry with global investment options and the country for whom this may be the only prospect for improving its energy supply situation. These limitations <sup>f</sup> may necessitate the allocation of public resources to energy development in a number of countries and as a development institution the Bank is ready to support these national efforts when it is convinced that they are an appropriate feature of the country's <sup>optimal</sup> ~~official~~ sectoral and national development strategy.

Proposed Scope of the Bank's Energy Program

6.28 The growth prospects of the developing countries depend on many factors, but one of the central ones will be their ability to successfully restructure their energy supply and consumption patterns in response to higher energy costs. Until <sup>is</sup> the process of transition has been successfully completed, energy will continue to be a priority sector in the Bank's overall program.

6.29 The analysis in this report has emphasized the massive need for financial and technical assistance to the developing countries to enable them to embark upon and successfully implement the investment and policy initiatives that are necessary in the energy sector. The World Bank can only provide a fraction of these requirements, within the overall resource constraints that govern its activities. Over the FY84-88 period, the currently planned scale of Bank lending for energy

development is of the order of \$...bn. As shown in table VI.3 below, this lending is expected to continue to support a diversified range of projects in the various energy subsectors, reflecting the increasingly diversified nature of energy investments in the developing countries themselves. In individual countries, the scale and composition of energy lending will continue to be determined on the basis of the country's overall sector and national development priorities.

Table VI.3  
Currently Planned World Bank Energy Lending  
FY84-88

<u>Sub-Sector</u>	(Millions of 1983 \$Dn	<u>%</u>
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To be filled in

6.30 This volume of lending is of course considerably below the levels that would be justified by the needs of developing countries and the availability of economically attractive energy projects suitable for Bank financing. However, given the Bank's overall resource availability a larger volume of energy lending could only be accomplished by displacing high priority projects in other important sectors. The above figures therefore assume a continuation of the 25% ceiling on energy lending as a % of total Bank lending that the Bank has imposed on the sector.

6.31 In addition to direct financial support for energy investments, the Bank will continue to place an increasing emphasis on the provision of technical assistance and advice to energy policy makers in its member



countries. The Energy Assessment Program is expected to cover a further 24 countries in the next 18 months bringing the total number of countries covered in this program to 35. A special small country energy assessment program is also planned with the <sup>a</sup>collaboration of UNDP and interested donor countries. Informal sector work and sub-sector analysis is also expected to increase in the near future. ↑

6.32 < The Energy Sector Management Program will also begin full scale operation in the coming year to provide the pre-investment policy and institutional support which has clearly been identified as a high priority for the sector.

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